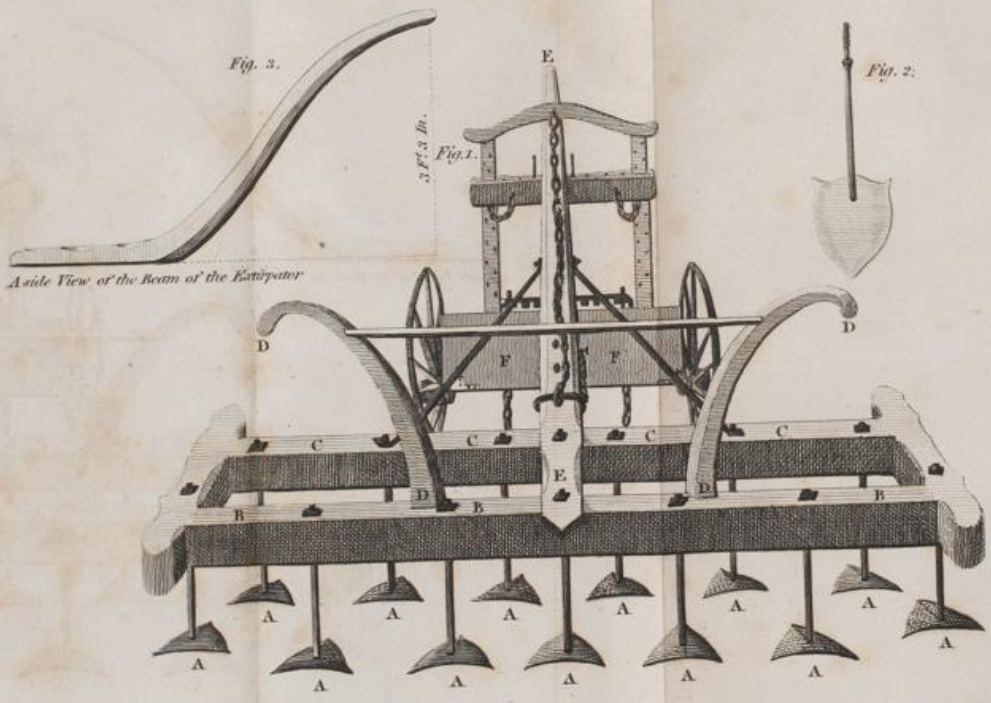

The EXTIRPATOR, *invented by* Lionel Hayward *of* Stoke Ash, *in the* COUNTY *of* SUFFOLK.

Neele sculpt. 352 Strand

THE

AGRICULTURAL MAGAZINE.

No. III.] *SECOND SERIES.* [Vol. I

FOR SEPTEMBER, 1806.

THE EXTIRPATOR.

[*With a Plate annexed.*]

THE annexed plate, represents the Extirpator or scalp-plough, so denominated by the inventor, Mr. Hayward, of Stoke Ash, in the county of Suffolk. This most useful implement was first published by Mr. Young, in his General View of that county, and afterwards strongly recommended by Mr. Lawrence, in his New Farmers' Calendar. It has since been adopted under various changes and improvements in almost every part of England, the improvement of it by Mr. M'Dougale, in Oxford Street, London, being supposed most convenient, and best adapted to general use. It is, in short, a most effective tool of that description, which has been so long known in particular districts of England, under the name of a scuffler, tormentor, or nidget, and has been since denominated a cultivator, arator, &c. Its purpose is to break clods, fine the land, and draw up weeds; and it is of the utmost use as well in the broad-cast, as the drill-husbandry. But there is a farther and most important application of this implement, which is, to prepare the land for spring sowing without the help of the plough, by which not only much expence is saved, but the seed is got in more expeditiously at a critical time, and with the land in a far better state, than could be obtained by the common method of ploughing. This plan of husbandry has been for several years past getting into practice, and it is particularly advantageous upon strong lands, which have been well fallowed and laid up in Autumn. In fact, lands of a light texture might be sufficiently cultivated for years together by this implement, without any assistance from the plough.

The Extirpator will work in all lands, and may be handled by any person who can manage a plough. It will easily plough one acre per hour, and not in the least distress the horses. The Rev. Mr. Lewes, of Thorndon, in the same

county, was assured by a farmer, that he could with three horses, work sixty acres a week with this implement; and that with it, as much land might be farmed by three horses, as would require six in the common mode of ploughing. We must however remark, that the tool in question appears to be upon a considerable scale, and capable of doing great execution; in course, on certain lands, a greater power of horses must be required. On a smaller scale, no doubt but three horses or oxen would be sufficient.

Fig. 1, Represents a back view of the machine, when put together ready for work.

A. The shares eight inches broad and nine inches long, fixed to stalks rising ten inches; distance between them eleven inches.

C. The fore ledge, five feet and a half long, four inches square; distance of the ledges twelve inches.

D. The beam seven feet long: its elevation three feet three inches. Figure 2.

E. The handles. Figure 3, a share with its stalk.

This instrument is fixed to the wheels, &c. of a common wheel-plough, and made to go shallow or deep in the same manner.

EXPERIMENTS ON DRILLING—MANAGEMENT OF THE POOR—SOWING ON STALE EARTH—CROPS IN NORFOLK.

To the Editor of the Agricultural Magazine.

SIR, *Norfolk Sept.* 10, 1806

MUCH having lately appeared in your Magazine on the comparative merits of the drill and broad-cast husbandry; I am induced to think that an account of a trial, made by me last year, may be acceptable to some of your readers. On its accuracy you may depend, as it was all, (as far as possible) conducted under my own immediate inspection, and each operation with its actual or probable expence, was instantly noted down by me in a book, of which I have given you a copy, and leave your readers to make their own comments.

N. B. Where the expence was equal, as ploughing, reaping, harvesting, &c. I did not think it needful to make any memorandum.

1804, Oct. 12 and 13, ploughed the Turnpike ten acres, containing ten acres, three rood, and twenty-five perch, clear of hedge &c. on one year's clover and rye-grass layer. Oct. 19, divided it into two equal parts, regular measurement, regard being had to quality as well as quantity.

Oct. 20, gave my bailiff (who is in favour of the broad-cast) the option of which division to sow upon.

		l.	*s.*	*d.*
1804.	Drilled Dr.			
Oct. 20.	To ten bushels of seed at thirty-five shillings and sixpence per coomb	4	8	9
	To two men and a boy drilling one day - - -	0	5	0
	To one man harrowing one day	0	1	6
	Use of four horses one day -	0	8	0
1805.				
Mar22&23	Scarified the whole close			
April 18.	To hoers - . -	1	0	10
May 25.	Do second time - -	0	17	6
June 29.	Hand weeders - -	0	11	9
		7	13	4
1804.	Broad-cast Dr.			
Oct. 20.	To ten bushels of seed at thirty-five shillings and sixpence per coomb	4	8	9
	To one man sowing one day -	0	2	0
	To one man harrowing one day -	0	1	8
	Use of two horses one day -	0	4	0
	One man and two horses half a day			
1805	harrowing . .	0	2	9
April 16.	To hoers - - - -	0	1	2
20.	Ditto - - - -	0	17	6
June 15.	Ditto - - - -	1	4	9
		7	2	7
1805.	Cr. Drilled			
Dec. 31.	By thirty-eight coombs one bushel at thirty-one shillings, weighed seventeen stone one pound per coomb	59	5	9
	Expences of weeding &c. &c.	7	13	4
	Produce of the drilled	51	12	5
	Ditto of Broad-cast	46	8	4½
	Balance in favour of drill	5	4	0½
1805.	Cr. Broad-cast			
Nov 2.	By thirty-four coomb two bushels and three quarters of a peck, at thirty-one shillings, weighed sixteen stone ten pounds - - -	53	10	11½
	Expences of weeding, &c. &c.	7	2	7
	Produce of the broad-cast -	46	8	4½

	l.	*s.*	*d.*
Here is a balance in favour of the drill of	5	4	0½
To which ought fairly to be added the superior weight of five pounds per coomb, which on thirty-eight coomb one bushel, will be about thirteen stone nine pounds; this at thirty-one shillings per coomb, of 17 stone one pound weight will be equal to - - -	1	4	9½
Also the drill stubble was perfectly clean, and the broad-cast very full of poppies (though I had desired my bailiff to spare neither expence nor trouble to get *his* crop clean, and give it a fair chance, but it could not be done) which of course have shed their seeds on the land to vegetate with some future crop, and I would readily give at least ten shillings per acre, to have the broad-cast side as free from poppy seeds as the drilled and if this may be taken into the account, it will add to the balance in favour of the drilled -	2	14	6
making the whole balance in favour of the drilled	9	3	4

which is equal to 1l. 13s. 7½d. per acre.

The seeding, weeding, harvesting, and thrashing, were done under my own immediate inspection, and I am confident as to the correctness of the above statement. I am certain that not a single sheaf was mixed, either in harvesting or thrashing, and, as far as may be, not a single kernel. I weighed six coombs of each and took the average, deducting four pounds for the sack. Our coombs consist of four Winchester bushels, and our stones of fourteen pounds.

I like John ———'s method of treating the poor in times of scarcity; but I think the allowance not quite sufficient: my own has been very similar to it. On the appointed day in each week when they are to attend, I inform myself from my miller of the price at which he then sells his meal. I consider a man's weekly consumption of meal to be one stone for himself, one stone for his wife, and half a stone for each of his children, of all ages; and that his earnings are equal to the common day wages of the country: and exactly so far as these earnings fall short of the sum requisite to purchase the needful quantity of meal, according to the above rule, I order the family to be allowed by the parish officer. I do not mean to say that a man and his family can consume all this meal; but then we well know, there are various other necessaries which he wants, and by putting it in his power to buy this quantity of meal, you thereby enable him to procure the other necessaries. Nothing can have a worse tendency than enquiring too particularly into a poor man's earnings

in such times; by it you encourage the laziness of the lazy, and depress the industry of the industrious. If a labourer has taken work, he probably earns more than common day wages, but then it is by over-exertion and working over hours; and if you allow him the less on that account, you for ever depress that honest spirit, which I am sorry is so much departed from the labouring poor.

To preserve this spirit as much as possible, I generally remark to the applicant on these occasions, that he is not to consider himself a pauper, but that as corn is very dear, and his weekly income arising from his earnings not sufficient to enable him to maintain his family, it must be made up to him in some other way.

I perfectly agree with Agricola Norfolciensis in the first Number of your present series, on the propriety of drilling on a stale furrow, but for another reason, with me very weighty, as well as those he has mentioned. The poppies to which my land is much given, have thereby an opportunity to vegetate between the time of ploughing the land and putting in the crop, and are destroyed by the drilling and subsequent harrowing; so that I have ever found my wheat and pea crops much more free from those noxious weeds, where the land had lain long ploughed before seeding. I would always plough all my land intended for wheat, if possible, immediately after harvest, and never drill until late in October. For pease I always endeavour to have the land ploughed before Christmas. I am a great advocate for the drill, but candour obliges me to acknowledge that my ploughed in barley is this year better than the drilled. I have remarked that generally neither the first nor the last, but the barley sown in the middle of the season is the best, so that I endeavour to get as much in during that time as I can, and having got all my land ready for seed, I set two drills at work, and have all the other men and horses ploughing-in upon another piece. Thus if the weather be favourable, I get in above twenty acres per day. This year, however, I observe the late sown barleys to be the best, they being not too forward when the rain fell in the summer, to receive the full benefit of it, as was the case with the earlier sown, which have suffered materially from the drought.

Our crops here are far from large, though much better than we had reason to expect three months ago, excepting the pease, which are very light indeed. The wheats on our high lands are very short, but I believe the county will produce a fair average crop; even where short, the ears are good and well filled. I have observed no smut (I must not say *brand* you

know) among mine, nor indeed have heard of any until I read your Magazine for last month.

I must apologize, Sir, for having prepared for you so long and tedious a communication, but having just finished harvest, I had nothing to tempt me into my farm, and a constant and soaking rain has rendered the morning quite unfit for shooting, though it comes very seasonably for the turnips, which I never knew more promising; and thus having taken up my pen, I scribbled much more than I ought to have done, before I subscribe myself

Your constant reader,

P. J.

P. S. I wish I could inform you where you can get a drawing of the Arator; the implement so called was much liked at Holkham. As to the dibbling machine, I believe it to be unworthy of your attention, or that of your Somersetshire friend.

ON TULL'S HUSBANDRY AND THE WIDTH OF INTERVALS—EXAMPLE OF FASHIONABLE DRILLING—FEN-COUNTRY MANURE AND CROPS—INFORMATION REQUESTED CONCERNING SEA-OUZE.

To the Editor of the Agricultural Magazine.

SIR,

IN my last communication, either by your inadvertence or mine, the name of Sir John Anstruther is omitted, from whose book the extracts were made on the Tullian Husbandry. In these extracts will be found a considerable dash and alloy of that absurdity, both of the French and English followers of Tull—the substitution of tillage for manure. Tull himself was not wholly free from a warp of the judgment in that affair, but had never the hypothetical confidence, like Peters and others, not only to deny, but even to decry the use of dung! At this point, however, our corrections must cease, for neither arguments nor counter-facts, have, can, or ever will be able, in the smallest degree, to invalidate the real facts, that Tull and his disciples, in numerous instances, and for a series of years, obtained crops of corn, equal in quantity and quality to the best of those both of his own and of the present day, soil being equal, from wide intervals, and in repeated successions of the same species of grain. Mr. Hill,

at this moment, I understand, is successfully pursuing his practice, now many years old, of eighteen-inch rows for wheat; and another of Tull's disciples may be expected, in about a twelvemonth, to communicate to the public his success of repeated wheat crops in a seven-years' succession: for three years his crops were equal to any in his vicinity. So far as my enquiries have extended, the cultivators with wide spaces acted in consequence of comparative experiments: is that the case with any of our modern drillers at six and nine inches? Have they ever made trial of the other practice, and if not, on what principle is their preference grounded?

I am aware that we find in the Annals of Agriculture a few accounts of unsuccessful experiments with wide intervals, made many years since, but they were greatly overbalanced by others, in which the success was equally complete with that experienced by Tull. And has not the drill-husbandry itself been often condemned in the lump, *experimentally*, and by the cultivators of prime note; what has, nevertheless, been the result?—Far be it from me to derogate from the merits of those, who, at six and nine-inch intervals, can obtain good crops of corn, keep their land clean, and in equal heart with land under that which I deem more favourable treatment: but I am sorry to say, indeed repeat, that my disappointments in this way are not few. In my journey towards Wiltshire, in July last, I heard, at my inn, of a famous cultivator in the neighbourhood, who pursued all the new improvements. Loth to lose such an opportunity, I took the liberty of calling at this gentleman's house. The gentleman himself was at Brighton, and his bailiff was absent at a neighbouring fair, but one of the farm-servants shewed me over part of a noble estate. He could not exactly ascertain the crops which were drilled, but pointed out to me one piece of twenty acres, which he *believed* had been drilled in six-inch rows. The bulk upon the ground was large, and the rows of corn most irregular in size; the quantity of thin, short, and diminutive ears very remarkable, and as to weeds, there was a sample of, I suppose, every species produced in the district, the quantity enormous. I was desirous to enquire the quantity of seed sown, being indeed suspicious of the real state of the case, from the appearance of the crop. The quantity I found was three nine-gallon bushels per acre, at which my wonder ceased, when the man assured me they sowed four bushels and upwards of barley. This notable practice I understood had been lately introduced from a famous district for all kinds of drilling. I should have been glad at the instant, to have put it to any practical drill-farmer, whether the same

piece of land, in a state of clean tilth, and sown with a single bushel or six pecks per acre, would not, in all farming probability, have produced full a quarter per acre more, than it was likely to produce in its existing state, the weight and quality of the grain far superior, in consequence, the price; and the land left in a perfect state? Surely some small advantages of real drill-husbandry may be descried in such comparisons of which there is no want. I write this for the particular use of those gentlemen who are upon the look-out for improved practice from celebrated farming districts

In my last, I gave instances of large acreable products in South Britain. The Annals of Agriculture have since reminded me of the Fen Country, where I have not been for several years. At Isleham, in Cambridgeshire, a manure is made use of not generally known or indeed attainable, namely, *minnows* or *sticklebats*, a small fish: the labourers of the above parish have earned, in one year, two thousand pounds, by collecting those fish for the farmers, at sixpence per bushel, twenty-five to thirty-five bushels of which, suffice to manure an acre of land; the crops on the best of which, sometimes extend to ten quarters of barley per acre, and eight quarters of wheat. The quantities of oats there grown per acre, in particular instances, exceed belief. The spontaneous production, as we may call it, of fish in these fens is curious. I am assured by a friend, that if a spot become accidentally covered with water, for any length of time, it will be found stocked with pike, the natural product of the waters of that country, although none shall have been put in. They are, it seems, of an inferior quality.

I request the favour of information concerning the use of *ouze*, as a manure, of those farmers who border on the sea or large rivers. I know of no county in which it is used but Norfolk, where they use this marine clay upon their sands, in preference to marle. But it is the use of the sea weed itself on which I want instruction. On our coast, both the mud and the weed are not only neglected, but accounted noxious; a most absurd and indiscriminating prejudice. The clearing of Ipswich river must afford a large quantity of this kind of manure.

AN ESSEX FARMER.

Danbury, Sept. 20.

ON THE DRILL CULTURE—MILDEW—IMPLEMENTS—CROPS—LIVE STOCK.

To the Editor of the Agricultural Magazine.

SIR, *Fakenham, Sep.* 7, 1806.

I Am very sorry that I have it not in my power to say something more decisive on the subject of broad and narrow intervals in drilling corn, particularly wheat; the season for sowing which will be almost general by the time you receive this. I more especially lament my inability, seeing myself in some measure called upon by our staunch friend Agricola Northumbriensis, to give my opinion It is true, I have hitherto uniformly drilled my wheat at nine-inch intervals, but it is also equally true, (from what cause soever it has proceeded) that I have rarely grown a good sample of wheat free from *mildew* (if their shrivelled grains are occasioned by mildew), or *close-bosomed*: and though this present season seems to have been particularly favourable to all my neighbours who are broadcast men and dibblers, yet am I a considerable sufferer. Very near me was grown a piece of wheat drilled at seven inches. The quality is excellent, though neither the bulk nor quantity of grain sown appeared to equal mine. Could the distance make this difference? I am, however, at present, so far inclined to think it had this effect, that I shall sow my wheat this autumn at six-inch intervals by way of trial. From many observations which I have made, but I confess from no actual experiment, I have great reason to believe, on that very light land wheat in particular, ought to be sown moderately thick and at narrow intervals, be the land poor or rich: for in the former case, no tillering whatever will take place, and of course if ends enough do not come up the crop must be thin and unproductive; in the latter case, a thin plant will tiller a great deal, even far beyond the ability of the land to support when ripening, and hence the kernels will be thin and shrivelled, and the sample much injured. On strong land I have no doubt but wider intervals are allowable for every kind of grain, but with what allowance the limits may, with propriety be extended, I am not competent to say.

However strenuous an advocate I have always shewn myself for the drill system, both in your pages, Mr. Editor, and in my conversations with my friends; yet I can assure you, my partiality in favour of drilling was not occasioned by my belief of its having worked such wonders both in *saving seed*, and producing such *immensely superior* crops, as some enthu-

siasts have asserted. Some observations I once sent you on Mr. Close's experiments, will, I think, sufficiently shew my opinion of such unreasonable expectations. I have always maintained the excellence of the drill system, on this score, that *it conduces so greatly to cleanliness*, which I apprehend is naturally attended with a *saving of expence*; a foul farm being always found to require the most tillage. In fact, I look upon all the agricultural machines, which have been of late invented and tried with success, both for the purpose of sowing, and hoeing, in the same light as I consider the various machinery employed in our silk and cotton manufactories; they *save labour*, if they do not produce *better* articles. Necessity has introduced those improvements in manufactories of every description, without which, we should have long since been undersold by every foreign competitor: and we may rest assured, that the exigencies of the time will set every brain at work to find out the cheapest way of tilling land, as well as of manufacturing silks and cottons. It requires, I think, no great portion of foresight to be able to predict, that on this account drill and thrashing machines will become much more general than they have ever been as yet, notwithstanding the outcry which several narrow-minded and ignorant persons chuse to raise against them. *These very men will one day be compelled to use them in self-defence.* But, Sir, if I speak thus confidently of the superiority of the drill culture when applied to corn, what terms shall I find wherewith to express my approbation of it when employed in raising the grand staple of Norfolk—"turnips"? I think I may venture to say, that as to comparative produce, drilling any grain can stand in no competition with it. I speak from the present appearance of my crop, which exceeds every thing I could produce before. Whether at the fall of their leaves I shall be able to shew so complete a set of beautiful *bottoms* as their *tops* now appear, must be left to the months of December and January to decide. Thanks, however, to Agricola Northumbriensis's valuable lessons, the prospect is beyond my utmost expectations. Will it be credited, if a twelvemonth hence I shall have the mortification to tell you that my example has induced not more than one to follow it, and this gentleman *so cautiously feeling his way*, for fear, I suppose, I should lead him on to his ruin, that he ventures but *half an acre* at the desperate hazard!

Your, &c.

AGRICOLA NORFOLCIENSIS.

P.S. We are now concluding harvest in the most delightful weather imaginable. The wheat crop is certainly abundant in this neighbourhood. Barley better than expected, but not more than two-thirds of an average crop; perhaps less.—Grey pease very bad in general, and the white scarcely worth mentioning. Grain of every kind on the advance, except wheat, which remains pretty steady from sixty to sixty-four shillings per quarter.

At Kipton sheep fair, last Thursday, lambs went rather high. South-downs evidently favourites.—Crones or aged ewes of this breed, readily fetched from twenty-seven to thirty shillings; their lambs from twenty-two to twenty-six shillings. One lot of half-bred Wiltshire ewe lambs by a Leicester tup fetched twenty-seven shillings, the wedders having been previously sold for thirty shillings.

A. N.

SUFFOLK SALE OF SHEEP.

To the Editor of the Agricultural Magazine.

SIR,

BEING just returned from the sale of the late Sir Charles Davers's South-down flock, which was held at Rushbrook Park, Suffolk, on the 15th instant, I have thought that a short account of the prices obtained there, might be acceptable to you and your readers.

There were about thirty-four score of flock ewes sold, which went off at from forty-eight to fifty-eight pounds per score. Thirty-two tups of different ages, at from six to forty guineas each. Thirty tup-lambs, from six to fourteen guineas per pair. Ten score of ewe-lambs, from thirty to thirty-five guineas per score; with some fat ewes, which of course did not exceed butchers' price.

The day was as unfavourable as it possibly could be, one continued heavy rain; nevertheless the sale was very numerously attended by most of the eminent breeders of Norfolk, Suffolk, &c. and peers of the realm, &c. were seen bearing the inclemency of the weather, and regarding much less the drops of rain, than the drop of the hammer: so great is the desire to obtain this most useful breed of sheep, and particularly from such flocks as the Rushbrook; the late very worthy Baronet having paid much personal attention to their improvement.

I am, Sir,

Your constant reader,

Norfolk, Sept. 16, 1806. P. J.

ON BEASTS OF DRAUGHT.

To the Editor of the Agricultural Magazine.

SIR,

WHETHER horses or oxen are the most profitable beasts of draught to the farmer, is a subject that has long been discussed, though not yet determined. This I do not pretend to determine, but I am inclined to believe that the latter are in general the most so. To point out a mean of diminishing the enormous expence of draught horses, is the purport of this paper.

The strength of an ox is generally, I believe, allowed to to equal that of a horse of the same bulk. The only two objections to using oxen instead of horses, are, that there is a difficulty in shoeing them properly, and that they do not generally walk quite so fast as horses. Shoes may be dispensed with, where there is not much leading on hard roads, which will be an annual saving of about 1l. But where shoes are necessary, I am inclined to think that they would answer better if they were made as horses' shoes are. An ox as well as a horse should be taught to lead and take up his feet when necessary before he is worked: as this would make the aukward but common practice of throwing oxen to shoe them unnecessary.

They have in India, and some other countries, a breed of neat cattle, much more active than ours, which are not used for the purposes of agriculture alone, but even to run in gentlemen's carriages and to supply the place of road horses; a great proof of their activity: and I cannot see any reason why these would not answer full as well as our draught horses, for the purposes of husbandry, if they were brought over to this country; or, perhaps, a cross between these and the Devonshire, Sussex, or Teeswater cattle, might answer better than the pure breed.

Against this proposal I am aware it will be alleged, that this climate is too cold for them; and why, I would ask, is it not too cold for our blood horses? for they, it appears, were originally brought from Arabia, Barbary, &c.; yet instead of degenerating, they have improved considerably in size and speed, by the care and judgment of man. And why should not the same care and judgment be bestowed upon the improvement of our cattle? Surely this would be a much more laudable attempt! But, if by actual attempt it should be found, that Indian oxen would not answer here, (though I have very little doubt but they would,) we ought to endeavour to improve our own cattle, by continually selecting those

bulls and cows to breed from, that possess, the qualities of activity, strength, hardiness, and an inclination to get fat on a little food, and in a short time in the superlative degree.

If we consider what our black draught horses were, before any spirited attempts were made to improve them, we shall be more inclined to believe that improvement may be made in our cattle also.

The Devonshire and Sussex are the best draughers of any of our British cattle, and the most likely to be so much improved as soon to equal the draught horse, or even surpass him in activity and strength.

In improving our cattle for the draught, we should be particularly careful not to lose the good property of feeding kindly, otherwise, as the saying is, " we rob Peter to pay Paul."

I find that oxen may be driven with bridles as well as horses, and, like them, will answer to the words of the driver. The best way of drawing them is in collars, or else in yokes to a pole cart.

Oxen cannot be expected to do as much work as horses, unless they are kept as well as them. They ought to be dressed as much as them, and to have as much corn ; but it should be crushed, otherwise it passes through them whole, and consequently they do not derive the full benefit from it.

But oxen and horses are not our only beasts of draught. Bulls appear to answer very well, as they will perform a very great quantity of work, which makes them very tractable ; and these are, perhaps, much less expensive than either horses or oxen. Spayed heifers, are, perhaps, more active than oxen, but I do not think they equal them in strength. Asses and mules have also been recommended as a better team for the farmer than horses. As to asses, I have long thought them a much more valuable class of animals, than they are generally allowed to be in England; and I doubt not but farmers in many situations would be great gainers by employing large asses in the place of draught horses, as the length of life of these two animals is so different ; the ass living until thirty years old, and the horse only until twenty ; besides, the ass surpasses the horse considerably in hardness of constitution, and in strength, inch for inch. The reason why our English asses are so much inferior to those of some other countries, must be attributed to our having fallen in with a worse breed, or to our neglect of them, by which means they have degenerated ; or both of them put together, or perhaps partly to the influence of climate : though with proper care I believe our climate would admit of very fine ones being bred. With good keep when young, and by constantly selecting

the best to breed from, I have little doubt but their size, action, and figure, might be very much improved, so as to suit for either the saddle or the draught.

Should you think this paper worthy of insertion, in your Agricultural Magazine, you may probably hear again from your most obedient,

A YOUNG FARMER.

ON MERINO AND NEW LEICESTER SHEEP, IN ANSWER TO PASTORIUS—AND ANSWER TO FARMER SANDY ON DIBBLING.

To the Editor of the Agricultural Magazine.

SIR, *Pickworth, Rutland, Sept.* 16, 1806.

SORRY am I that Pastorius will not agree to the terms proposed by me, on the long contested debate of the superiority of Merino and New Leicester sheep, as I imagined no unreasonable concessions on his part were asked. If therefore he will persist, it appears something like obstinacy, therefore he must expect something similar in his opponents.

When mutton is the question, and gratifying the pressing calls of hunger, then I side with Pastorius; but when wool is the question, and clothing our backs and pampering our appetites, it is then I side with Mr. Bartley. Perhaps Pastorius will exclaim, "The Leicester will clothe our backs too"—granted they will, and fifty years back, the farmer and grazier might clip his Leicester wool, spin it at home, and wear the coat produced: the times, however, are very materially changed since that period; whether for the better or worse, we shall not stop to enquire. Suffice it to say, that won't do now.

But the grand question in debate I imagine is, taking wool and mutton collectively, which will put the most money in our pockets. Here I must again side with Mr. B. while the present disparity continues, between the price of Leicester and Merino wool. Observe I do not say increasing the number of Anglo-merinos, might not depress the price of the wool: when that falls, or the Leicester rises, there ends my simile.

It appears from Pastorius's last letter, that there is but one description of ground proper for the Merinos, that the Leicesters are to have the best; and I imagine a breed of bad Scotch sheep, with wool not much superior to dog's-hair, the worst. Now it is my firm opinion, that any given quantity of ground, from two, to twenty acres, fairly divided in half,

and separately grazed with New Leicester and Merino sheep, I care not what the land is, from the rich verdant mead to the bleak, barren mountain, let the grass be natural or artificial, the Merino must, at the present prices of wool, I maintain it, pay the most money. This must plainly appear to any cool dispassionate reasoner. Indeed how can it be otherwise, if the Merino fleeces are worth twenty-one shillings, and the Leicester only seven, and more kept on an acre of the former than the latter? Pastorius will say his fleeces are worth more than seven shillings each; so they may, but the larger he has his sheep, and the fuller of wool, the fewer he will feed per acre: and from what I know of New Leicesters, when the suckling ewes are included, seven shillings may be thought a fair avarage.

How this wonderful defalcation in wool, is to be made up in mutton, is an enigma not easily solved; and though not addicted to laying of wages, I should not hesitate to risk a sum on this.

I do not assert this to depreciate the new Leicesters, as I really think for general consumption, they are the best breed in the kingdom. But I think the same of any sort of sheep whose wool is not more valuable than the Leicesters.

Pastorius in his last expresses surprize, that ewe lambs are worth less money than wedders. I do not know what they may be in Scotch fairs and markets, but in ours they always are: as to their getting fat as soon as the wedders, I never doubted.

I must now pay my respects to my old friend Farmer Sandy. I fear I was rather too severe upon him in my last. If he reflects a little, he will think he rather deserves it. He had for some time been levelling his shafts of ridicule at dibbling, and dibblers: and his letter certainly savoured more of satire, than asking opinion. He appears to condemn the dibble for its simplicity, and that it is not more complicated. Now this I maintain to be the greatest merit of all agricultural implements, *to be simple and efficient*. What have common ploughmen to do with science? they abhor it. Put a complex machine in their hands, they will not endeavour to find out the best way of working it. On the contrary, they will strive to put it out of order, or break it. I do not speak this from supposition, I have had plenty of proofs of it; and when the master's back is turned, they begin to exercise their country wit on the luckless machine, generally the oldest man in company harangues them thus: "Ah, theas new scheeams weant do, if there had bin ony better weys than the old, just as thof they woud not a bin feen out afore now."—What, for instance

can be more simple than the common swing plough? yet how well it is calculated for doing the business every one knows.

As for what Agricola Norfolciensis says about dibbling, is quite as much in my favour as Farmer Sandy's, and when he quoted A. N.'s words, he might as well have mentioned the whole sentence as part of it, which is—" I am not sure the dibbled corn will yield a better crop than the drilled, *if the latter is well executed*, for there lies the grievance;" by which he obviously means, on account of the complicated nature of the drill machine, it requires more attention than the *scientific men* are willing to allow it. In another part of the same letter, A. N. says, " By no means is F. S. right in his conclusion, that I consider dibbling as a barbarous practice: on the contrary, I consider it as the very best method of seeding land; but from its expence not so eligible as the drill. I cannot say that I have discovered that it gives that encouragement to which F. S. alludes." How Farmer Sandy then makes it appear, that Agricola Norfolciensis is " much in his favour and against me," I am at a loss to discover.

I have just seen Mr. Parkinson's opinion on dibbling.* He says,—" The great advantage of dibbling wheat, is in the treading of light land by people passing and repassing." Again, he says, he much approves dibbling all flag-land, or sward ploughed up for clover, hay, &c. and likewise recommends the furrow to be twelve inches wide.—" Among dibbled wheat you will find the fewest small and light ears." On the expence of dibbling, he expresses himself as follows.—" The expence of dibbling is with some an objection. Individually it costs money, but publicly it costs nothing, because it is done chiefly by women and children, who must be maintained from the produce of the earth; and is it not better that the women and children should work for their meat and clothing, than to have it found them for nothing? And in the proper season for dibbling wheat, there is no other work for them. The expence is from nine shillings to ten shillings and sixpence per acre. Some may say, clay soils it will injure. But I say, no."

" Oats, peas, and beans ought all to be dibbled; as harrowing brings them to the top, as it does stones; and it is impossible to cover them properly but by dibbling or drilling."

I am, Sir,

Your very humble servant,

JOHN WRIGHT.

* Mr. Parkinson has been taking an agricultural Survey of the county of Rutland. I have to lament my being from home when he called upon me. I have doubtless lost much information by it.

ON THE MECHANICAL POWERS APPLIED TO THE HORSE, AND THE EARL OF BRIDGEWATERS PLOUGHING MATCH.

To the Editor of the Agricultural Magazine.

SIR,

THE late ploughing match at the Earl of Bridgewater's at Ashbridge, Hertfordshire, of which I shall say a word or two by and by, induced me to turn over two or three treatises on the mechanical powers, not much indeed, I must own, to my instruction. Probably, however, the following quotation from Mr. Gregory's Treatise may be capable of some practical application and use, by persons better versed in the subject than myself. That author says:

"It has been stated by Desaguliers (Vol. 1, page 251) and some others, that a horse employed daily in drawing nearly horizontally, can move, during eight hours in the day, about two hundred pounds at the rate of two miles and a half per hour, or three feet and two-thirds per second. If the weight be augmented to about two hundred and forty or two hundred and fifty pounds, the horse cannot work more than six hours a day, and that with less velocity. And in both cases, if he carry some weight he will draw better than if he carried none. Mr. Sauveur estimates the mean effort of a horse at one hundred and seventy-five French, or one hundred and eighty-nine avoirdupoise pounds, with the velocity of rather more than three feet per second: and this very nearly agrees with our deduction in Art. 378, Vol. 1. But all these are probably too high to be continued for eight hours, day after day; for in our investigation just referred to, we assumed ten feet per second, as the utmost walking velocity of a horse, a velocity which we conceive no horse would be able to continue long. In another place, Desaguliers states the mean work of a horse as equivalent to the raising a hogshead full of water (or five hundred and fifty pounds) fifty feet high in a minute. But Mr. Smeaton, to whose authority much is due, avers from a number of experiments, that the greatest effect is the raising five hundred and fifty pounds fifty feet high in a minute, and from some experiments made by the Society for the Encouragement of Arts, under the direction of their late worthy Secretary, Mr. S. Moore, it was concluded that a horse, drawing at the rate of three miles an hour, can exert a force of eighty pounds."

To apply the concluding proposition to ploughing, if I understand it right, a horse that has only eighty pounds weight to

draw, that is to say, comparatively to drawing that weight along the ground, attached to his harness, will be able to move at the rate of three miles per hour, and continue it.—Now it is probable that in ploughing very light land, eighty or a hundred pounds, is the utmost quantity of draught that is imposed upon the plough-team of two horses, from which it should seem that they must be very well capable of ploughing more than two acres per day. But surely such calculations cannot pretend to a very perfect degree of accuracy, since the horse's powers of speed must be taken into the question, and to urge some horses to the speed of three miles per hour, would be to distress them as much as to draw a heavy weight. The theory also that a horse can draw the greater weight for carrying a portion of weight upon his back at the same time, I fear is practically untenable; it seems not to have been included in the calculation, that the simple bodily exertions of the horse must necessarily diminish in exact proportion to the weight he may have to carry; that if advantage be gained one way, it must be lost by another: in the same manner, that by increasing the extent of circumference in a wheel, whilst we gain power, we must proportionally lose time. In fine, I would thank any mathematical correspondent of the Magazine, to apply the above quotation from Mr. Gregory to whatever points of practical utility it may be capable.

To come to the ploughing match—the *mechanical effect* produced by three of the losing ploughs, namely the Sussex, Wilts, and Berks, was stated to be greater than that of the Hertford, to which, nevertheless, the superiority was adjudged; for example, the mechanical effect of the Sussex was at 10, 8, that of the Hertford at only 8. 8.—Now on what principles can such calculations be grounded, when we are at the same time informed that the width of furrows, depth and force of draught, exerted by the Hertford Plough, were considerably superior to the same powers in all the rest? Surely such powers, and such only, must be demonstrative of the degree of mechanical effect.

Let it be remembered, that I wrote merely as an enquirer, and with whatever knowledge of the comparative nature of soils, the merits of plough-labour, and the abilities of the plough cattle, certainly without the smallest mathematical or mechanical pretensions. I was not present, but the account seems to convey to my apprehension a superiority of power, as well as goodness of work, in the Hertfordshire plough.

Farther, many farmers beside myself would be glad of a more particular explanation of the superiority of the old Herts plough. Though inferior in mechanical effect, it was supe-

rior *in an agricultural point of view.* Surely this needs explanation. Of what nature were the defects in the work of the other ploughs? The Herts plough, we are to suppose, is upon the plan of that ancient one, of which you have given us a figure in your last Number, and perhaps, in essentials, very little, or not at all, varying from it. The Wilts and Berkshire ones were probably on the same principle; and it seems we must still submit, in despite of every improvement, to the superiority of the old, heavy wheel-plough, upon harsh, adhesive and flinty soils. The only remaining question is, as you have already put it, can the old plough be farther improved, can it be rendered less cumbersome, and yet retain its ancient powers? Thus much, however, has been learned by those who needed such information, that neither the Scotch, the Rotherham, the Somerville, the Essex, Suffolk, or any, of either the old, or new light two-horse ploughs, will at all succeed on strong and embarrassed soils.

If my information be correct, Wood's Sussex came so very near the old plough, in point of execution, that it was a difficult thing to determine; and, as I understood, if Mr. Wood had used four horses instead of two, he had stood a fair chance for superiority. A very important consideration, in my opinion, is always overlooked on trials of this kind; I mean the vast advantage in favour of those ploughmen who are upon their own ground, perfectly knowing the nature and condition of it, and in constant practice thereon; whilst a man, who perhaps never saw the spot but a few hours before his trial must commence, will surely, on that account, labour under proportional disadvantage. To render the contention perfectly fair, strangers ought to have the benefit of trying their tools on the spot, during several days at least, previous to the match. After the business had been settled at Lord Bridgewater's, it seems, Sir John Sebright very generously challenged Mr. Wood to start the following day, at Sir John's house, against his Hampshire plough, twenty guineas to nothing; to wit, if Sir John was beaten, he would forfeit to Mr. Wood twenty guineas. It happened precisely so; Sir John was beaten, presented Mr. Wood with the forfeit, and Mr. Wood presented Sir John with the successful plough. I should be much obliged to any gentleman for a description of this Sussex plough of Mr. Wood's, and I have no doubt but a drawing of it would be both agreeable and useful to the readers of the Magazine.

I am Sir,

Your very obedient servant,

A BERKSHIRE PLOUGHMAN.

Near Abingdon, Sept. 10.

ACCOUNT OF CROPS—THE CONTROVERSY ON THE SUBJECT OF SHEEP AND DRAUGHT CATTLE RESTATED.

To the Editor of the Agricultural Magazine.

SIR,

OUR wheat crop in this quarter will, I apprehend, by no means equal the sanguine expectations which were formed of it immediately previous to harvest; at least so much I am sorry to be compelled to say on my own account. I shall not average two quarters and a half per acre (from the drill at nine and twelve-inch intervals) and the sample generally discoloured, in part smutty. The worst, about a dozen acres, the chaff feeling moist and clammy, and not smelling sweet, I had determined to stack in the field, according to the custom of our western neighbours, hoping that it might be dried and purified by the current of air; but my orders were either mistaken or disobeyed. Oats I shall have barely three quarters per acre, and those universally branded and smutted. My beans are an excellent crop, the sample of *Kidwell's* (ticks) particularly handsome; the quantity my bailiff warrants five quarters per acre. Of barley I sow but little, and this year it is of the Teddington, or fine thin-skinned species from Surrey, some of the best probably in England, which my land has sported, the product rising thin and much coarser than the seed; the quantity per acre small indeed. I was induced by a neighbour to sow a few acres with Gibb's purple pea, a strong and productive, not early sort, except with regard to the sowing, which we did accidentally in February; the crop has been far more fortunate than the generality of pea-crops this season; we hope to find four quarters per acre, and the sample even improved. Our grasses, lucern, sainfoin, and cow-grass, (perennial clover) have cut most abundantly since the first crop, which was rather late, and the after-grass is now most luxuriant. Swedish turnips have failed, and run this season unaccountably; potatoes luxuriant in haulm, but suspicious as to quantity. My sheep, South-down and Anglo-Merino, never proved better; and I am so happy as to say the same with respect to cows, (Holderness chiefly) young cattle, and colts. It would tend to general information, if every correspondent of the Magazine would give a true statement of his crops, and the condition of his stock.

Your excellent correspondents Pastorius and Agricola Northumbriensis, in the last Number, seem to refer their respective controversies with two other able and respectable correspondents, Mr. Brightley and Clericus et Colonus, both, I am given to understand, living neighbours in the county of Herts, to the general body of contributors to the Magazine.

For my own part, I cannot venture to give an opinion in a case, in which none but men of the highest liberality are concerned. I must, however, be so free as to presume, that however amazing, either to the readers or to the writers themselves, these controversies may be, yet real, practical facts, which would not admit so much controversy, might rank higher in the scale of utility. To begin the question, with ox labour, a considerable difference is certainly occasioned by the circumstance of our possessing, or rather monopolizing the superior breeds in the South. This circumstance totally supersedes the calculation of Messrs. Culley and Bailey, which has already been given twice in the Magazine (Nos. 41 and 51), the latter with additions and comments by Agricola Northumbriensis. Besides, a circumstantial answer has already been given to the above statement, which cannot be passed over, and is indeed generally deemed decisive by the public. Nevertheless, the claim of practical experience by Agricola Northumbriensis is perfectly just and admissible as far as it goes. It has, however, not extended to the length of a more equal comparison of the two distinct species of animal, which so often takes place here. That oxen consume more hay, and need less corn than horses, is a fact of ancient notoriety with us; that they can be kept cheaper than horses at full feeding, is another fact which we have repeatedly ascertained. We must recollect also that the Yorkshire, Durham, and Teeswater cattle are probably the largest consumers in Britain, and necessarily require more hay than any of the active and thin-skinned breeds. With respect to driving oxen with reins, I can answer from my own experience; no horses on earth will drive more steadily, indeed with or without reins, in the most crowded streets of London. In fine, I entirely agree with a late criticism in the Magazine; *oxen will, equally fed, perform any farming labour that horses are accustomed to do;* but I can at no rate agree with certain enthusiasts, that oxen are, or ever can be, equal to horses in respect either of strength or speed; and so far I have the pleasure to coincide with your Northern correspondent, who has certainly treated the subject in a practical way.

As to the proverbs and conumdrums of the Rev. Gentleman, which have occasioned merriment rather than dispute, I think I can without much pretence to conjuration, strip them of their veil. Clericus et Colonus seemed to hint that he would no longer dispute (at least such at the instant appeared to me to be his meaning) until one of the most obvious and best known phenomena respecting blight was acknowledged by his antagonist, namely, *the frequent locality of the atmosphere stroke.* Without intending the slightest disrespectful allusion to his Reverence, I hope I have proved *a satisfactory Warburton to this Pope.*

In the dispute also with the Essex Farmer, there appears to be some misapprehension, if I understand both parties aright. The Essex Farmer does not appear to deny that the quantity of drilled turnips above broad-cast, is, or may be, in a far greater proportion than that of drilled corn over broad-cast, which quantities indeed he allows often to be equal; he only asserts, that such circumstance is an inferior consideration, placed in the scale of the aggregate benefits of the drill husbandry. He seems also greatly to undervalue the turnip culture comparatively with its general estimation. On that head certainly much has, and may be said, in favour of potatoes and various other articles. Turnips are not only of inferior quality, but the risk of their culture in unfavourable seasons is extreme. I have known a breadth of one hundred acres twice sown, and at last fail so totally, that scarcely a root was produced.

But of all other controversies, that concerning sheep between Mr. Bartley, Pastorius, and Mr. Wright, appears to me to be terminable with the greatest facility.

The arguments on both sides are chiefly speculative, in course the *victory* must be suspended until the speculations are realized by actual facts. When Merinos, or Anglo-Merinos, shall have been substituted for New Leicesters, upon the large scale, but not until then, this part of the controversy may cease to be pure speculation: in the mean time, in point of fact, we rest solely on the single experiments of Lord Somerville: in point of *probability*, there is doubtless much to be said, and the account in the last volume of the Bath papers, will assuredly strengthen the cause of those who prefer the smaller breeds of sheep. A Wiltshire gentleman has for some years (with myself and others also, for the change is becoming general among us) followed up the experiment of exchanging the native stock of large Wiltshire sheep for South-downs; and in the experiment recorded in the Bath papers is proved, that not only five South-downs have been kept on the provision formerly consumed by three Wiltshire sheep but fifteen tons of hay have been saved for sale, in one winter, every ounce of which was formerly consumed by the large sheep. Nearly the same thing has resulted to myself, and in proportion with the Dorset sheep I formerly kept, which are of smaller size than the Wiltshire. Mr. Robineon of Wiltshire, has also experienced the same result on a very considerable scale. That the pure Merinos consume still less than the South-downs, I well know; that the case would be similar with the Anglo-Merinos, whenever of inferior size to the Downs, I suppose is a fair conjecture. That South-downs will produce more money per acre than new Leicesters, upon any land, begins now to be generally supposed; but on that point I am unable to speak from regu-

lar and decisive experiment. As to new Leicester mutton being exclusively fit for coal-heavers, manufacturers, &c. I apprehend those who use that argument, bring it into play rather in a jocular, than serious manner. We have plenty of large and fat mutton, far superior to new Leicester, for strength and flavour particularly the Lincoln and Cotswold, which are also superior in size, if large joints be the taste.

With respect to strong nutriment, I am convinced Mr. Bartley was well grounded in his opinion, that the superiority lies with the fine woolled sheep, a piece of the flesh of which being ever found more solid, and to contain more nutriment than a piece of equal dimensions, of any coarser fleshed and long wooled breed, but more particularly of New Leicester, the flesh and gravy of which are pale and comparatively insipid. That breed has rendered infinite service to the country, but I really believe the period is not far distant, when it will be found equally advantageous to supersede them, in favour of some other long woolled variety, or probably to cross them, in search of certain qualities, wherein they are plainly deficient. Beyond this, it is highly probable the small breeds will have a considerable extension in this vicinity and farther westward, at any rate; for excluding other considerations, the preference to small joints of mutton, even in our manufacturing districts, increases daily. But as to the extension, in a certain degree, of the Spanish cross, Messrs. Bartley, Pastorius, and Wright, are unanimous. Nor ought the case of exposed and stormy countries prove a bar to that unanimity, because, as I before observed of another, that branch at present is purely speculative. It should not be forgotten by one party, that Sweden is a far severer clime than Scotland, and that the unnecessary degree of exposure by injudicious flock masters, will add no weight to their side of the question.

I have thus, Mr. Editor, done my best to reconcile the differences of equally meritorious correspondents, and trust my humble endeavours will be acceptable to your readers at large.

Hants, Sept. 21. W. W.

PLAN OF BAILIFFS WEEKLY RETURN OF BUSINESS ON A FARM.

To the Editor of the Agricultural Magazine.

Sir,

THE necessity of keeping accurate accounts with bailiffs, and of frequently settling them, is obvious. This sheet contains the plan invented and adopted by Edwyn Andrew Burnaby, Esq. of Braggrave Hall, Leicestershire. It is printed on a large sheet of paper, and delivered to him regularly every Monday morning if at home; and if absent, it is forwarded to him by post. Of course, the examples are imaginary.

AMICUS.

WEEKLY ACCOUNT OF STOCK.

	Last Week remain.	Bought.	Yeaned.	Tupped Bulled Brimm'd. Hor'ed	Shorn.	Sold.	Ill.	Dead	Remain.
Oxen Working	12								
Cows	4	1	1	2					5
Calves	3		1						4
Heifers		1							1
Yearlings	15							1	14
Two Years	20						1		20
Three Years	20								20
Four Years	20								20
Five Years	19								19
Six Years and upwards	20					5			15
Ewes	600				300				600
Lambs	620						2		618
Lamb-Hogs	299								
Theaves	300								300
Shear-Hogs	299								299
Feeding Ewes	50				50	20			30
Two-Shear Sheep	10				100	60			40
Pigs	10								10
Horses	3								3
Mares	3								3
Colts	2								2
Fillies	1								1
Asses	2								2

CORN.

	Mown	Reap'd	Housed	Thrash	Winnowed	Sold	Sown	Wed
Barley				20 qr.	20 qr.	20 qr.		9 acre
Oats				10 qr.	10 qr.	5 qr.		close
Wheat								6 ditto
Dills								
Beans								
Pease								
Lentils								

MONEY RECEIVED.

BALANCE LAST WEEK	10	0	0
Received of Mr. Simons to ten quarters of barley	20	0	0
Of Mr. Purl to ten quarters of barley -	20	0	0
Of Mr. Miller the landlord of the crown to five quarters of oats -	7	10	0
	57	10	0
Received to 20 ewes fat of Butcher Charles -	50	0	0
	107	10	0

The sixty wether sheep was on the road to Smithfield

MONEY PAID.

BALANCE LAST WEEK	0	0	0
Thompson one week	0	15	0
Thompson's son his plough boy - - -	0	6	0
Richards - -	0	15	0
Mayne five days -	0	12	6
Jackson five days -	0	12	6
Lowndes five days -	0	12	6
Lucas five days -	0	12	6
WOMEN.			
Barnes three days -	0	3	0
Richards ditto -	0	3	0
Jackson ditto - -	0	3	0
Mayne two ditto -	0	2	
Lowndes three ditto .	0	3	0
Paid for a cow at fair	18	0	0
Ditto for heifer at ditto	12	0	0
	35	0	0
Balance	72	10	0
	10	7	10

Weekly account how teams and labourers have been employed.

Monday June 20 — Thompson ploughed with double-furrow plough sadder back close for turnips.

James Richards sowed turnips and harrowed them in. Mayne, Jackson, Lowndes, and Lucas, carting out manure for turnip land. Women as per hour. Barnes, Richards, Jackson, Mayne, and Lowndes.

Tuesday 21 — Men employed as yesterday, but owing to the rain no women came.

Wed 22 — Men employed as on Monday as well as women, except Mayne who was absent.

Thursday — Thompson ploughing as on Monday, Richards sowing as on Monday, Mayne, Jackson, Lowndes, and Lucas carrying hay in low meadow, all the women making hay.

Friday 24 — Thompson and Richards went for coals with two teams, Mayne, Jackson, Lowndes, and Lucas, winnowed twenty quarters of barley and ten quarters of oats: no women to-day.

Saturday 25 — Thompson took ten quarters of barley to Simons the miller, Richards took ten quarters of barley to Purl, the maltster, and afterwards five quarters of oats to the Crown; no women or other labourers.

ON THE CULTIVATION OF WASTE LANDS.

THE following account of a most successful plan of cultivation of a tract of waste land in South Wales, is extracted from the publication of Col. Capper, who has thereby eminently served the agricultural interest of his country.—We need not inform our readers, that in the present state of our growth and demand, this is one of the most importanto bjects in the whole range of agricultural pursuits, and the most deserving their immediate attention.

OBSERVATIONS, &c.

"The agriculture of this country has, within these few years, considerably improved, and still continues improving; nor would it so long have remained in a state of cultivation inferior to others less favoured by nature, had not formerly the inhabitants of Glamorganshire, perhaps wisely, preferred possessing all the necessaries and comforts of life in abundance, and even many of its luxuries, to the more splended enjoyments of wealth and power. It is in the remembrance of many now living, that there was scarcely a waggon or cart in the county, and of course it will be easily believed, that turnpike roads were at that period perfectly unknown. But within these forty or fifty years, the natural riches of the country, which had so long lain concealed in the bosom of theearth, were developed.

"The mines of ore, with lime and coal, which abound in our hills, were explored and worked, and Merthyr Tidvil, amongst other places, which only thirty years ago was an insignificant village, is now become a considerable town, full of iron foundries, with a population of more than ten thousand inhabitants.

"Few towns are better situated for trade than Cardiff and

Swansea; when therefore these manufactories of iron were established at Merthyr, canals in different directions were formed to convey the iron by water carriage to the sea ports. Such an increase of population, together with the formation of canals and turnpike roads, soon gave rise to an active spirit of agriculture. But the introduction of so many strangers, who received high wages of course in the first instance, occasioned a considerable advance in the price of provisions and labour. However, as agriculture serves to improve trade, so trade reciprocally tends to the improvement of agriculture. The progress that has lately been made in the latter, soon proved that the inconveniences arising from trade were merely local and temporary, and likewise were easily obviated. The old estates immediately became much improved, waste lands in some places were cultivated, and by these means the supply of provisions of the county itself is already become nearly equal to the consumption. Complaints, therefore, of the increase in the price of labour and provisions no longer exist. The gentlemen and the farmers will hereafter be able to pay liberally the artificers and labourers, and thus every class of the inhabitants will partake of the benefits derived from a gradual improvement both in agriculture and trade.

"It is needless in this place to enquire whether individual happiness is the consequence of this sudden increase of wealth amongst those who formerly were blessed with every comfort and enjoyment they could reasonably desire. But when a general spirit of agriculture and commerce, assisted by the arts and sciences, pervades every other part of the kingdom, it is not to be supposed, that one of the most highly gifted counties in Great Britain, should wish to be the last in the list of those which laudably aspire to add to the national wealth and strength. In this point of view, therefore, every candid and patriotic Cambrian must consider the improvement of trade and manufactures as highly beneficial to the country, and it is to be hoped that every gentleman and farmer will meet the manufacturer and merchant with an equal degree of activity and intelligence, by which means they will continue to enrich themselves individually, and at the same time obviously to benefit the community.

"One of the first agricultural objects which attracted the attention of the public in this neighbourhood, was a large tract of barren heath, situated about two miles north of Cardiff. About four years since, application was made to parliament for a bill to enclose it. This seemed to me a fair opportunity of cultivating to advantage a portion of that waste, part of which lay contiguous to one of my farms. The land sold on an average at the rate of twelve guineas per acre, and it ap-

pearing, that in general the soil would admit, at a moderate expence, of considerable improvement, I determined to purchase about one hundred and fifty acres of it.

" When this plan was first adopted, I had almost every thing to learn respecting the cultivation of waste land, and of course it was incumbent on me to acquire, from the most approved authors, what information I could on that subject. Some of them strongly recommended the denshiring system of paring and burning, whilst others of equal experience and respectability, in unequivocal terms, condemned it. However, having already seen this process successfully carried on in Devonshire, I at length adopted this plan, and shall now report both the manner of conducting it, and the result of my experiment; but previous to entering into the particulars respecting the management of the soil, it seems necessary to make a few observations on the divisions of the fields, and also on both the manner and expence of making the fences.

" The principal drains and roads were judiciously laid out by a regular surveyor, under the orders of commissioners. The fields were afterwards divided and fenced by the purchasers. The course of the drains and roads in some measure influenced the shape and extent of the fields; but, a few instances excepted, no field exceeds twelve acres, nor is less than four. The major part of them are between four and eight, which appear to me neither too large nor too small for any farmer; that is, they are spacious enough for cattle to graze in, are easily ploughed, and yet are not liable to many objections made against either very extensive or very small enclosures.

"The banking, ditching, and backing, cost, altogether, twenty pence per pearch, of eighteen feet each. The bank is nearly four feet high, and between two and three feet broad, including the backing; the ditch eighteen inches deep, and two feet wide; planting young quicks two-pence per pearch, and the price of good quicks in general, is about half a guinea a thousand. In most places, especially on the outside fences, I have put the roots of old thorns, hazel, birch, holly, hornbeam, and other plants suited to dry banks; but in wet marshy places, I have of course planted alders, withy, and other aquatics. In the edge rows I have also planted oak, elm, ash, birch, and larch trees. The larch has failed only in a very few instances, the ash thrives very well, and also the birch, but the oak and the elm have not succeeded. The failure of the two last may probably be partly ascribed to their being planted on the banks in new ground, and perhaps they require to have their roots at least in the old natural ground properly prepared. Many people object to having trees planted in hedge rows; this subject however has been ably dis-

cussed by others, and therefore I shall not expatiate upon it in this report.

"My first attempt was made on a field of ten acres. The labourers undertook to brest-plough or pare the field, and then to burn the turf and spread the ashes at three guineas per acre. The person I consulted on this subject fixed this high price, in order to induce the labourers to undertake a work but little understood in Glamorganshire, but I afterwards found that it might be, with great propriety, reduced to the following rate: thirty shillings for paring or brest-ploughing, ten shillings for burning the turf, and five for spreading the ashes. At this price, an industrious labourer may earn, without injury to his health, from eighteen shillings to a guinea per week, and the women, who are generally engaged to burn the turf, about fifteen or eighteen pence per day, which would afford each of them a comfortable maintenance, leaving nothing to either for idleness and dissipation. Strong men should, I think, invariably be employed in spreading the ashes, and they also should be carefully watched, otherwise this essential part of the work will be imperfectly performed, for the ashes ought to be strewed equally over the ground, and the stool, (that is, the place on which the turf was burned,) should be carefully scraped and spread abroad. A great variety of opinions prevail also respecting the thickness of the turf, but this must necessarily, in a great measure, depend upon the soil. Where there was a sufficient depth, I have preferred cutting the turf about an inch and half, or even two inches thick, by which means a large quantity of ashes are acquired, and the fern and furze roots, as well as those of other weeds, are more effectually eradicated. Those who burn the turf are much disposed to put it into large heaps, especially when the same persons are not employed to spread the ashes; and some excellent philosophers and farmers even have approved of this method, as producing by a smothered fire, in a large heap, a greater quantity of carbonaceous substance. Nevertheless I preferred moderately sized heaps, rather small than large, which being more generally diffused, cover a larger portion of the ground. The heat of these small fires opens, but does not bake the ground to a brick, yet still has sufficient strength to destroy the roots of weeds; and as to carbonaceous substance, if the heaps of turf are sufficiently closed at the top with a slow fire, as in making charcoal, the vegetable matter will be effectually converted into a carbonaceous substance, retaining all the fertilizing qualities justly ascribed to these ashes. The labour of spreading the ashes from a number of small heaps is likewise considerably lessen-

ed, and consequently the ashes are more likely, by this mode, to be equally spread over the surface.

"We employed all our strength immediately to plough-in the ashes, which was done as lightly as possible, but the hardness of the ground, and the toughness of the various roots, together with the number of large stones, made it difficult when thus attempting to work superficially, to keep the plough in the ground. From these different obstacles in the first breaking up of the land, with working generally nine hours, we could seldom finish with one plough above three-fifths of an acre per day. When the ploughing was finished, we employed all hands to get off the stones and roots; the former, when of a proper size, were kept for building, the smaller stones were put on the roads. The next step was to cross-plough the field, and take out the remainder of the stones and roots; and this was followed by dragging and harrowing, so as effectually to mix the ashes with the soil. Although the ground in general broke up kindly, we thought it would be better to break the clods with a heavy roller, and in this manner prepare the ground for lime. Overpersuaded by my servants at the commencement, I was induced to use rather too much lime. On the first two fields I put ten dozen sacks on an acre, each sack containing three Winchester bushels, amounting to three-hundred and sixty bushels an acre. Lime in most parts of this county is cheap, and therefore we are the more easily induced, even on old estabilished farms, to be rather profuse in the application of it. Half the quantity, assisted with the ashes, I have since found to be sufficient at first, and another five dozen of effete lime, mixed with earth and dung, may be added when the land has been properly cropped, after the ground has been ploughed up a second time. The lime was spread when it was properly slaked by the rain and dew, and ploughed and harrowed-in without delay, and thus the field was prepared for sowing; but notwithstanding the wholesome advice of letting the sower follow the plough as soon as convenient we postponed this part of the work to the proper season for sowing wheat, which I believe farmers, in well conditioned land, generally consider to be one week before and two weeks after Michaelmas. When the proper time arrived, we sowed under furrow about twenty gallons, that is a Welch bushel of wheat per acre. These three fields afterwards produced on an average about eight Welch, that is, twenty Winchester bushels per acre. In some spots where the soil was good, or where it had been accidentally better prepared by a greater quantity of ashes, the crop was partially equal to twelve or even fourteen Welch bushels per acre; but on some others, where the lime had been left too

long, or was not properly spread, it was in some particular small patches almost entirely barren. The wheat sown was, for the most part, red lammas, which seemed to thrive better on the heath than on any other sort. After having sown wheat on the ten acres, I resolved to try a different mode of culture on the two other fields; but, for perspicuity sake, we will continue to state what was done on the ten acres from the commencement to the present period.

"The soil of this field, we found, was become a light sandy loam, with about fourteen inches of this kind of earth on a gravel. In this soil, for a second crop, we sowed barley, about twenty gallons per acre, and at the same time about twelve pounds of red clover per acre. The first appearance of the crop in the month of June was very promising, but it afterwards gradually fell off, and at last produced very indifferently. Two acres of the west side of the field, which was under the shelter of a hedge of an adjoining farm, produced at the rate of about forty Winchester bushels per acre, the rest was overrun with grass and weeds, mixed with the barley and clover. When, therefore, it was nearly ripe, we cut the barley and clover of this part of the field together, to serve as fodder for the oxen and horses during the winter, and thus I believe it amply repaid me the expences. The third year the first crop of clover varied, as the barley had done the preceding year; about four acres of the sheltered part of the field was an excellent crop, which was mowed, the remainder was grazed by sheep penned with hurdles. The whole of the second crop of the third year was afterwards in like manner sheep-grazed. On about two acres of the middle of this field, which had not been properly managed, or which had suffered for want of shelter, and consequently the crops of barley and clover in some degree failed, small quantities of fern appeared after the grazing of the sheep on the third year, but they were easily removed by hand-weeding in a couple of hours.

"On the two adjacent fields, after having previously pared and burnt them, we first sowed Poland oats without the addition of lime, and had from the ashes alone an excellent crop in each of them. These we ploughed again in the autumn, and in the following spring put about ten load of lime and earth mixed on an acre, and in the smallest field a few cart loads of dung, all we could conveniently spare from the old farms. In May we drilled some Swedish and white round turnips into the four acres, and in the following month sowed the five acres broad-cast with tankard and white round. They both succeeded pretty well, and the turnips of each field were eaten off by sheep hurdled, and in wet or very se-

vere weather we also gave them some good hay. Although they remained in these grounds the whole winter in a very exposed situation, we lost only one ewe, which was almost broken-mouthed; but it is proper to observe, that the major part of the flock consisted of strong young wedders, all of them in very good condition, thirty of which were sold to the butcher in the following spring.

"The turnip crop was followed in both fields by barley with ray grass and clover. The form of these two adjoining fields is nearly the same; the summit is about thirty yards, then follows a gradual descent to the north, which finishes with a sudden fall of about ten yards, and the whole terminates in a bottom of a few yards, bounded by the main drain of the heath, through which there is a constant run of water.

"On the summit and breast of these fields, where the turnips succeeded best, and consequently the sheep were longest confined in eating them off, the ground having been well manured and trodden, the crop of barley was excellent; on the declivity it diminished, nor was it much better in the bottom, where the turnips partly failed, and where some spots of peat earth made it unsafe to keep the sheep in wet weather; nevertheless, I must here observe, that waste land thus situated in a bottom, where it constantly receives the washing of the upland, is, in my opinion, capable, in the course of a few years, by good management, of being rendered the most fertile part of the field.

"These were the only fields I could bring into cultivation myself the first year, but a friend sold me some pieces adjacent, of which the following is a faithful report of his management.

"His first attempt was on three pieces, one of seven, another of six, and a third of eight acres. He likewise adopted the denshiring system. After the two first had been pared and burnt, and manured with about eight dozen of lime per acre, he sowed them with white and red round turnips, which produced a good crop; these were fed off with sheep hurdled, and the second year he sowed them with Poland oats, the first with clover only, and the other with ray grass and clover. The third field he pared and burnt, and then sowed it with wheat without liming. In this state, these and some other fields, which will be hereafter noticed, fell into my hands. The second year, both the first crops of ray grass and clover only were mowed, and the third year they were fed off with sheep hurdled. The first year the wheat, which had not been properly limed, did not succeed, producing little more than five Welch bushels per acre, about twelve and a half Winchester, of small ears and meagre grain. In the

following autumn, I put a small dressing of lime on this piece, and sowed it with pease in the spring, which proved to be an excellent crop, not less than sixteen waggon loads, but it produced likewise an immense number of weeds, which we ploughed up and burnt on the field.

The third year we manured part of this field, as much as we could, with dirt and ashes from the town of Cardiff, and sowed the whole of it with Poland oats and ray grass and clover. That part of it, which had been manured as above mentioned, produced extremely fine crops of oats and clover, nor did the other part by any means fail, although neither the oats nor the clover were so abundant as in that part which had been previously manured.

"It is needless to repeat circumstantially what was done the second year on ground treated in the same manner, and with nearly similar success; I shall therefore conclude this part of the report with observing, that one small field, on which my friend had adopted the plan of mixing lime with the ashes, and sowing wheat at the beginning of October, succeeded perfectly well, producing on an average about twenty Winchester bushels per acre. On this field, which was part of my purchase, I afterwards ploughed up the wheat stubble, and sowed some winter vetches, which answered very well; but for want of hurdles, and on account of my being impeded by a variety of other business, these vetches, instead of being fed off, as perhaps they ought to have been, were suffered to ripen; but they produced a fair crop, which was mowed and kept for seed.

When the same plan of sowing wheat had been followed on some other fields of this new land on the heath, I determined to sow two of the wheat stubble fields with vetches and oats. These, it occured to me, might be converted to use in three different ways; either in grazing them with sheep when perfectiy green, or cutting them as hay just before the oats hardened, and when the vetches were still in blossom, or allowing them both to ripen, or rather to be mowed when the oats were ripe, and the vetches bagan to pod. Not being much in want of early spring feed for the sheep, I adopted the two last of these plans, and cut the oats and vetches as hay for winter food for the horses and working oxen, which seems to answer perfectly well, especially in a new enclosure, where winter fodder is likely to be scarce; and the ray grass affords plenty of food both for autumnal and subsequent spring grazing. At the same time it must be remembered, that the vetches being of a very succulent nature, they are much longer drying than the oats, and consequently, unless they are cut

in very dry weather, it is difficult to make them together into good dry hay; but when they do succeed, they afford very palatable and nourishing food, both for working oxen and young cattle.

Without entering further into a minute investigation of the various arguments suggested by different philosophers, on the subject of the cheapest and most effectual mode of breaking up waste land in general, I do not hesitate from the proceeding and following well-known facts, to pronounce, that paring and burning will be the cheapest and most effectual method of bringing the land similar to that on Cardiff Heath, into cultivation. In every instance this mode of proceeding has fully succeeded with us; and on the contrary, ploughing simply, without paring and burning the turf, has, under my own eye, constantly failed. In a field adjoining to one of mine, the plough only was used: it was ploughed, cross-ploughed, dragged, and harrowed, at an immense expence of labour and harness, and the first year it was sown with wheat, of which it literally did not return the seed, whilst in a field, separated from it only by a low bank with a young quick hedge, which had been pared and burnt the same year, there was a very fair crop of wheat, not less than ten bushels an acre. My neighbour, who had suffered himself to be dissuaded from paring and burning, endeavoured to repair his mistake, by putting on the field a sufficient quantity of both lime and dung, on which in the second year, he sowed barley with ray grass and clover in one part, and oats with seed on the other. The former proved but an indifferent crop, the latter was a fair average crop, and the ray grass fully answered the proprietor's expectations. My crop on the adjacent field was oats and vetches, and was equal to any crop of that kind I ever saw. But it is scarcely fair to judge by one example only; I shall therefore mention another, where a gentleman, on the opposite, or north-west side of my farm, put himself to the expence of digging the ground with the spade at the rate of eight-pence per perch, rather more than five pounds per acre, without its having been previously pared and burnt. He sowed turnips there, but did not gather ten roots upon an acre. From these two examples of failure in ground not pared and burnt, adjacent to others which were pared and burnt, and which invariably succeeded, I feel myself fully justified in concluding, that in soils similar to that on Cardiff Great Heath, the paring and burning is the least expensive and most effectual mode of proceeding to bring waste land speedily into cultivation.

"This first step gained, we will, in the next place, consider what crops apparently succeed best, and also by what

means those crops are most easily obtained. My first attempt, as before observed, after having spread the ashes, and mixed them in the manner above mentioned, with a proper quantity of lime, was wheat. My reason for it was to obtain re-payment of my expences, by cultivating the most valuable crop whilst the ground was well manured, or, as a farmer would say, was in good heart, nor was I disappointed, as the following statement will shew.

Breast-ploughing, burning, and spreading the ashes, 2l. 3s. per acre, for ten acres is 21l. 10s. Ploughing, cross-ploughing, and dragging, at 10s. per acre each, total 5l. Five dozen of lime, for each acre, at 10s. 6d. per dozen, 26l. 5s. Removing stones, six days, at 10s. per day, 3l. Seed-wheat, one bushel per acre, at 20s. per bushel, 10l. and expence of sowing 5l. I am not aware that, in this account, any material expence is omitted, nor any one that is stated undervalued. The total expence then of sowing ten acres with wheat, amounts to 68l. 2s. 6d. The average produce was eight bushels per acre, estimated at the same rate as the seed wheat, amounts to 80l. But it must be remembered, that wheat for some time past has sold for 30s. per Welch bushel, and consequently the crop, at that rate, produced a clear profit of more than 51l. 17s. 6d. besides what arose from the subsequent crops.

Objections have been made to cultivating wheat in the first instance, but for my own part, it appears to me the most profitable mode of proceeding. This crop should be followed by turnips, or else by oats with ray grass and clover; but I should in general greatly prefer the former, especially if a sufficient quantity of old dung is near at hand, and barley with seeds may then be tried after the turnips, especially if the crop of turnips succeeded, so as to keep the sheep a sufficient time on the field. By these means the course of the crops will run thus: wheat, the stubble carefully ploughed in the autumn; then turnips, and these followed by barley or oats, and ray grass and clover. The first crop of ray grass and clover will be grazed by sheep or horses, as may be judged most convenient. When a field thus managed is broken up a second time, I do not entertain a doubt of its becoming, in a short time, nearly equal to most other land in the neighbourhood; but we must not expect that a child should at once acquire the strength of a man.

"With a great many acres to cultivate, it may be necessary, in order to gain time, and for many other reasons, to vary the crop. In some cases it may answer to begin with turnips, in others with oats and seeds, and sometimes with oats only. In some lands, where mucilage seemed wanting,

I have tried buck wheat, and ploughed it in with great success, especially when afterwards mixed with lime and dung. But in all cases where the option was left me, I began with wheat, and proceeded in the manner above described; and in this manner I should always recommend others to proceed whenever circumstances will permit. Wheat, when the ground is properly prepared, will always amply repay the expence of paring, burning, and spreading the ashes; and green leguminous crops, eaten off by sheep or cattle, will afterwards improve the land considerably, even without the help of dung from the farm yard, which, however, is also to be used when it can be procured at a moderate expence.

A wish of possessing one hundred and fifty acres in a ring fence obliged me to purchase a few acres of boggy ground, which of course required more attention, and likewise more expence, than the rest to bring it into cultivation. In five or six fields there were small spots of bog arising from springs on the breast of the opposite hills, which have been long choked, and have made temporary swamps a few yards around them; but these have been tapped, and surface drains made from them, to conduct the superfluous, or rather top water, by the side ditches to the main drains, and in some particular instances by strong covered or open deep drains to the same channel. Since they have been thus treated, these fields have been sown with wheat, and have borne this year very excellent crops. At the bottom of these hills, on both sides, runs a small brook, which has been converted into one of the main drains of the heath; on each side of the brook, the earth has been gradually washed down from the adjacent hills, and consequently it deposited a quantity of black mould about two feet and a half, and in some places three feet deep; underneath this soil is generally a fine white sand upon a gravel, but in some places the mould covers only a common peat earth. Various experiments have been made on these different soils: with a mixture of lime we have obtained a tolerable crop of wheat, even from the peat earth, and on the remainder, by the same means, we have had an abundant crop of oats. It is my intention, next year, to try if cabbage will thrive in these bottoms, by the help of a mixture of lime and dung. Nor have I the smallest doubt, but in the course of a few years these vallies will throw abundant crops of excellent grass, which, in many places, already begins to appear. The first year after it had been drained, we were able to plough one half of this boggy bottom, the remainder has been either planted with withys and other

aquatics, or, after having been dug with spades, has been sowed with oats.

"From the preceding state of facts, extracted from my farming diary, which shall be open to the inspection of any neighbour disposed to examine it, it appears that paring and burning the surface, with the addition of a moderate quantity of lime, is an effectual mode of preparing waste land for cultivation. From the same documents it may also be inferred, that wheat, with a succession of green leguminous crops, fed off by sheep, will amply repay the expence of cultivating a new enslosure. But farmers, who, from an intimate knowledge of the business, are best able to undertake such a business, seldom possesses either capital or confidence enough to carry it on with proper spirit; and gentlemen who have money, seldom have leisure or inclination to attend to the details of farming. For these reasons, principally, one of the most useful branches of agriculture has been hitherto too much neglected.

"It is a general remark, and often founded on truth, that farming is a losing concern to a gentleman. Opulent men, who have been liberally educated, and especially when young, whilst they are capable of enjoying the pleasures of society, can seldom submit to the drudgery of farming, which, of course, as I have before observed, requires unremitted attention to trifling details; but this does not appear to me the sole cause of failure. When a gentleman determines to undertake personally the management of a farm, he must, in the first place, appropriate a certain portion of his fortune for this particular use, and of course the sum must be in proportion to the nature and extent of his farm. In a cultivated arable and pasture farm of one hundred acres, it is my opinion he ought not to commence his operations without being able to appropriate a capital, expressly for this purpose, of at least 1000*l*.

"Horses, oxen, cows, sheep, and pigs, must be purchased, then follow implements of husbandry, without reckoning additional stables, sheds, perhaps a barn and threshing machine. It must likewise be remembered, that before any receipts come, other considerable disbursements must be made. Labourers for twelve, or even eighteen months, must be paid, taxes, tythes, church and poor's rates, wear and tear of implements and tools, sadlers' and farriers' bills, &c. must also be paid in advance, as likewise the purchase of grain and other seeds, especially in an arable farm. It would be useless to enter into the minutiæ of all these expences, the general view of them is sufficient to shew, that a capital of 1000*l*. is scarcely sufficient for a farm of one hundred acres.

But we must not suppose that the expences of a farm increase in the same proportion, according to the number of acres. I believe 1500l. would suffice for one of 200 acres, and probably 2000l. or less, would answer for one of 300 acres. Hence it is evident that if, during the first two years, a man, alarmed at the constant expence, should stop short, he will find it a losing concern; but should he persevere, and act with industry and intelligence, on the third year he ought to gain a profit of twenty, or if he sustains no unexpected losses, perhaps of thirty per cent. for his capital: we will content ourselves with stating the former. In the course of a few years, then, he will consequently be reimbursed his capital, and with the advantages derived from experience, whilst he evidently benefits the community, he ought annually to add very considerably to his own private fortune.

"Before the arguments to be deduced from these self evident facts are applied to the cultivation of waste land, I shall beg leave to add a few words on the subject of another groundless prejudice, which likewise serves very much to discourage gentlemen in general from undertaking the management of a farm.

"It is very often said, and very generally believed, that great losses are sustained from the indolence and laziness of the labourers, that they are idle and ungrateful, and that no sense of obligation will attach them to their employers' interest.

"For very obvious reasons this charge of ingratitude of the labourer has never been candidly investigated. When impartially considered, it will perhaps be found to be little more than a temporary misunderstanding between the parties, in which the one asks too much, and the other does not feel disposed to grant enough; a contest I have generally found to be easily settled by a moderate sacrifice on the part of the master.

"The industrious farmer of course makes with his labourers what he considers the most advantageous bargain he can for himself, but the gentleman often acts by deputy, and in general he must believe what he hears of them from others; sometimes it is possible he may himself be offended at a person abruptly leaving his service, for what the labourer calls bettering himself; but when the poor man is well paid, knowing that he has no reason to expect higher wages or better treatment elsewhere, he will, of course, be careful of not incurring his master's displeasure. It is true some few instances may occur of a wrong headed or restless individual being blind to his own interest, or it may happen that a neighbouring farmer, a manufacturer, or an engineer making

a canal, may occasionally offer higher wages than a gentleman thinks proper to give. In this case we must not be surprised if a labourer, tempted by such an appearance of advantage, should think of quitting his former master, even although he may have been employed by him in winter, when moderate labour, with good wages, is not easily obtained. But unless the difference of wages be very considerable, I do not believe this venial act of apparent ingratitude will frequently occur, for labours easily discriminate between a temporary and a permanent advantage, and will seldom quit a substance for a shadow; but should the additional allowances be very considerable, and at the same time be likely to become permanent, what reasonable man would condemn an industrious labourer, to whom a small addition of wages is a serious consideration, for endeavouring to increase the means of subsistance for himself, and perhaps for a wife and family. Besides labourers have strong local attachments, which they will not abandon for trifling advantages; it is therefore incumbent on them, within their narrow circle, to preserve a fair character amongst their employers, on which their own happiness and that of their family entirely depends. With respect to the charge of indolence and idleness, it is natural for all men to avoid unneccessary fatigue; but if they perceive the master is attentive to his business, they will not venture, by being idle, to forfeit their places; but on the contrary, if the master seems indifferent to what is passing on the farm, they also will often neglect their work, or do it in a slovenly manner. Nor is their conduct influenced solely by the force of example, or the fear of giving offence. I have sometimes been told by my labourers, when working by job: "Why, how is this, master, you take no notice of a poor jobman?" They are flattered, as well as checked, by the presence of their master, and are evidently very much gratified when they give satisfaction. It is impossible, by establishing any general fixed rate of wages, to avoid these occasional disputes; wages will fluctuate according to various circumstances of time and place; but it may be safely asserted, that the farmer will invariably find it his interest to pay his labourers liberally, by which he will get his work expeditiously and effectually performed; and it is surely advantageous to him, who derives all his profits from furnishing most of the necessaries and comforts of life to the community at large, to increase the consumption of them universally as far as he can. It is true he will himself bear a small portion of the burthen, but whilst he enriches himself by the sweat of his labourer's brow, justice, and even common prudence, call upon him to pay his labourers bounti-

fully. Live and let live is a wise and honest maxim, and those farmers who observe it will never have reason to repent of their liberality.

"The well known wish of Henry the IVth of France, no doubt arose in his mind from the purest spirit of humanity, but in fact there was as much policy as benevolence in this generous wish; for when the peasantry are well fed, agriculture will flourish, the revenues of the kingdom will increase, and every man will cheerfully take arms in defence of those comforts, which no change of circumstances is likely to improve.

"Thus by a short, but I hope not a useless digression, having endeavoured to adduce some few arguments, which may serve to render farming less exceptionable to those who possess a capital to carry it on with spirit, I shall now proceed to enquire into the best manner of employing these means for the cultivation of waste land, to the further consideration of which subject we will immediately return.

"After so many able writers and experienced farmers have pointed out the advantages resulting to the nation, and likewise to individuals, from the enclosure and cultivation of waste lands, particularly in the vicinity of sea ports and large manufacturing or market towns, it would be useless for me to occupy much of your time and attention in dwelling on this subject. At the same time I cannot refrain from observing, that in the present state of this country, we possess peculiar advantages for carrying on this branch of agricultural improvement. Our hills, as before observed, abound with excellent lime stone, and also with coal to burn it. Canals and turnpike roads now form a ready communication, not only with our largest towns. but likewise between even the villages themselves. It is to be hoped then, that the legislature will soon listen to the suggestions of Mr. Bellingsley and others, who have lately strongly recommended a general bill of enclosure, unfettered by tedious and expensive parliamentary formalities, by which such a power may be vested in the lord lieutenants and deputy lieutenants of the different counties, or rather in the magistrates at the quarter sessions. To us such a measure would be singularly advantageous, and remove one of the principal impediments to our future improvements. Looking forward towards the attainment of such a desirable object, and supposing the first difficulties may be hereafter surmounted, I shall now add a few general remarks on the most easy and effectual means of carrying such a plan into execution.

(To be continued.)

ADVANTAGES OF TILLAGE AND INCREASE OF PRODUCE.

(Continued from page 125.)

	Q.	B.	P.
THE two and a half acres horse-hoed, produced	10	5	0
The one equal distant - - -	4	4	0
The one sown broad-cast - -	4	2	0

In 1765 the two and a half acres horse-hoed the preceding year were again drilled with barley, and managed as in the former year.

	Q.	B.	P.
The produce was - - -	10	0	0

Sir Digby mentions the mediums for three years of the horse-hoeing to have been three quarters six bushels, and with this he compares the Norfolk course.

In another letter he says, "The same field in which the experiments of barley were made, as related in 1763, is now sown with wheat. The eight successive crops of this field were wheat; yet the land is so far from being exhausted by so many burdens, that it seems yet in perfect heart, though no manure has ever yet been laid upon it.

Mr. Crack, near Dumfries, who practised the drill husbandry, says in his letters, "About seven years ago I began to drill in double rows, on ridges five feet broad, but I have now reduced them to four feet ten inches. I continue the double rows of wheat, and drill a little short of a Winchester bushel to a Scotch acre, (one and a quarter English.) My return, upon an average, is about twenty-five of the said bushels since I began. The total expence of harvest home is about a guinea, seed included; but my return would exceed this, were it not that some parts every year failed, which failure was occasioned by a vein of sandy gravelly soil that runs across two of my fields.

I have now the 7th crop growing on my first acre. This acre, as well as all my fields, was dressed at first with shells, and bore four broad-cast crops immediately preceding the drilled crops.

The field with the sixth drilled crop, and which had five broad-cast crops previous to these, has as full a crop as can stand upon it, except where the sandy vein comes in.

In general, where the soil was originally tolerable, I cannot perceive any decline of the crops. Last year, on half a Scotch acre, I had twenty-two Winchester bushels, (thirty-five bushels per English acre), but these lands were all equally good soil: but the return would considerably exceed this, were it not for some parts of every field, that have every

year failed; in some, as already mentioned, by a vein of sandy gravelly soil that runs across two fields, and in all the others, from levelling old crooked ridges.

I have now the seventh crop of drilled wheat growing on my first acre;—and at present it promises to be the best. This acre consists of twenty-two ridges, nine of which were three years ago strongly manured with dung: that side being lighter, generally failed; since dressing that part has proved better, but is still inferior to the undunged side. The field with the sixth crop of drilled wheat, and which had five broadcast crops previous to this, has as full a crop as can stand upon it, except where the sandy vein comes in. The field with the fifth crop is inferior to it, though as good a soil.

The Rev. Mr. Dean, a clergyman in Berkshire, who practised horse-hoeing, in a letter written several years ago says, "In my opinion Mr. Tull's principles are founded on truth. I have practised his horse-hoeing husbandry above twenty years on the same land, with successive crops of wheat, and can see no reason to question the truth of his principles.

"Mr. Tull used all the manure he had of his own as I do. A part of a field near my house has tasted no dung or manure since I began. For experiment sake the other part was frequently dunged, and the whole cultivated alike: but the difference of the crops at harvest was scarce discernible. My servants, who knew the place, thought they could perceive the odds: but it would be very difficult for a stranger to find it out. In general, my Tullian crops (which are large and upon various fields) have been nearly equal to the sown crops of my neighbours in the different years." His drills were the same as those described by Mr. Tull, which sow only two rows for horse-hoeing.

Mr. Dean tells us that he practised Mr. Tull's horse-hoeing husbandry above twenty years on the land with successive crops of wheat, with but few intermissions. He says, "Through the frequent avocations of my servants, and neglects in catching critical seasons for horse-hoeing, my lands became foul and out of tillage. This was the reason of intermitting my annual crops to clear the land, which has happened about three times since I began.

"I can only say in general, that my Tullian crops have been nearly equal to the sown crops of my neighbours. I plant three pecks of wheat on a statute acre, and receive from two to four quarters in return. The farmers in the old way plant about ten or twelve pecks on an acre, and receive in return no more than I do.

"This last year, (the wettest I ever remember, therefore

the most improper for pulverizing the soil), afforded me twenty-two nine-gallon bushels of clean corn, (twenty-four and three fourths bushels Winchester) from a statute acre. My soil is not the best wheat land, nor adapted forTullian husbandry, because we suffer greatly by the extremes of both wet and dry seasons; sometimes our land being bound up as hard as iron, not to be touched with a plough, and sometimes all in a pap, not to be trod upon."

Mr. Philip Miller, author of the Gardener's Dictionary, mentions two experiments of the drill husbandry compared with the broad-cast: "First, a field was sown, partly with broad-cast, and partly in Mr. Tull's method with wheat. The drilled was sown at two feet distance, and stood then in the rows; the roots formed by these grains of wheat had from ten to thirty stalks, which continued upright till the corn was reaped, whereas few of the roots of the common husbandry had more than two or three stalks, and most of it was lodged before harvest. When thrashed, there was near a third more in weight and measure from the drilled, than from the same extent of ground taken in the best part of the field sown in the common method."

The second experiment was sowing the corn at different distances: of some sown in two parts of the field, that which was sown broad-cast was lodged, as was most of that where the rows were *six* and *nine* inches asunder. That which stood at *one foot* escaped better, but the rows at *two feet asunder* were the best, and produced much more than any of the other. This shews the absurdity of a great quantity of seed, in order to have a greater produce, which is the opinion of most farmers.

"I have been informed by persons of great credit, that on good land, which was drilled and managed with the horse-hoe, they have had twelve quarters from an acre of land, which is a great produce; and this with greater certainty, if the season prove bad, than can be expected by the common husbandry."

Mr. Randall, author of the semi-Virgilian husbandry, practised drilling in all the different manners, and to a great extent; he is of opinion, that dunging ground made fine by tillage and ploughing, does hurt and lessens the crop. In giving directions for his method of culture, which he calls *limited* or *garden* Fineness, he says, when ground is one fourth short of this degree of fineness, dung adds one fourth; but because in the general practice the weeds are carried into the ground with the dung, they rob the ground of one fourth part. If the fourth wanting be added by tillage, it brings the soil to garden fineness, and produces a crop of

forty-eight bushels, whereas if added by dung, it produces only thirty-six.

And again, he says, "Here the reader is to take notice, that if a favourable season happen, and all things are done as directed, applying the dung-hill will ruin the crop, if it serve him as it served me."

Another proof of manure not being necessary, or of much advantage to the crop when drilled and hoed, as it comes from a gentleman, who is no favourer of the drilled husbandry, will have the more weight with those who suppose that tolerable crops cannot be obtained in that husbandry without manure.

Mr. Young, in his Experimental Agriculture, among many experiments mentions one, comparing the broad-cast and drilled modes of agriculture after fallow, as well as in successive crops.

	In the drilled husbandry,	PER ACRE. Q.	B.	P.
5	crops drilled and manured -	3	1	0
8	drilled after fallow, equal distant rows	3	7	2
8	drilled after fallow, and horse-hoed	3	1	3
	The average of the fallowed	3	4	0
10	successive - - - -	2	1	0
31	Average of thirty-one crops -	3	0	0

He says, "Hence it appears, that manuring the drilled crops by no means answers. The produce of the manured crops is only one bushel superior to the average, a superiority so trifling, that it does not prove even the benefit of the manure: when the expence of the manure is thrown out of the accounts, the profit arises to 1l. 11s. 6d. but when included, amounts only to 11s."

In the third volume of Bath papers is an instance of the successive crops without manure, by Mr. John Butt, of Kingston; beans were planted in drills near two feet apart, in a good clay soil, after two ploughings, and being horse-hoed three times, the turnips being sown in the intervals after the third hoeing. There was no kind of manure or dressing laid on the ground for six crops past, nor is there any need of it, as I find by experience, that drilling and horse-hoeing answer the end.

The crop of beans was near three quarters per acre. The weight of the turnips was thirty-seven tons and five pounds, as measured by Mr. Pairour and Mr. Headford.

Mr. Pairour, in a letter also gives an account of this crop:

"I was informed that the field which contains little more than six acres has been under a course of drilled husbandry for five or six successive years, during which it has had no manure or top dressing. The beans were drilled the last spring at less than two feet, they were horse-hoed three times. At the third hoeing the turnips were sown promiscuously amongst them about Midsummer."

In the 4th volume of Bath Papers, Mr. Hazard gives the following account: "A field was cultivated upwards of twelve years, and had every year uncommonly large crops.

"The first was peas; they were sown in drills two feet eight inches apart, which were twice hoed, and afterwards earthed; they were gathered and sent to market, the straw cut and given to horses, the ground cleared the 13th July.

2. "The ground was immediately cleared and sown with turnips broad-cast, which were twice hoed. The field sold for five pounds per acre, and cleared the beginning of February.

3. "Was ploughed and afterwards well pulverized, it was sown with spring wheat *broad-cast,* but was never hoed nor weeded.

4. "In autumn the 2d year, the ground was ploughed without delay, and spinach sown in four feet drills. This stood the winter; and midway between these drills garden beans were planted the following January. Both crops were hoed; the spinach was cleared by the middle of May.

"The ground received another hoeing, and on the same drills where the spinach grew, cabbages that had been raised in a seed plot were planted. The beans stood for seed, and were sold for 8s. a bushel; the cabbages were carried from the land, and given to cows in February.

"It was ploughed after the cabbages were removed; and after the ground was well pulverized, peas were sown in drills three feet asunder; these were gathered and sent to market.

"And after the autumn these were removed, and coleworts, which had been in a seed plot, were planted about twelve inches distant from each other. This was a good crop, and sold to cow-keepers."

Thus were *eight* profitable crops obtained in four years. The writer of this says, he was eye-witness to the crops which were raised upon the same land, the eight succeeding years, and knew them to excel all in the neighbourhood.

The mode of cultivation was nearly the same in all, except that barley was sown on the fourth year, instead of spring wheat. Oats were sown in like manner, and potatoes were once planted between drills of seed beans; and the hoeing was always attended to, and well performed, except when the land was sown with corn.

" It has been lately laid down with grass, and is come to a good sward without having any *manure* laid upon it for more than *sixteen years*; twelve of which it was cultivated as before related."

To try the effect of drilling ground in bad order, and what crops it would produce, the writer of these remarks drilled one acre that was in very bad order, for four years successively, with wheat upon ridges, four feet six inches, with two rows at ten inches, and without any manure, and reaped and thrashed the eightieth part, or thirty-seven yards one foot four inches. From this it appeared that an acre produced at the rate of from twenty-four to twenty-eight bushels per acre, without declining, the last being the best.

The author of the scheme of drill husbandry, states the produce of eight successive crops upon the same land without manure; the produce of the four last crops of wheat increased every year, the last crop producing twenty-nine bushels. All these drilled crops yielded greater crops than the broad-cast with manure.

In the Bath Society Papers, vol. 2, is mentioned an experiment for one year of drilling wheat horse-hoed, upon a light soil in bad order. It was manured with a compost dunghill of earth and dung; the produce was twenty-eight bushels three pecks. Another instance is given in the Bath Papers of manuring drilled crops, by a very intelligent farmer, Mr. Anderson, who practised drilling for eleven years successively, during which time he manured twice, the first year with twelve hogsheads of lime per acre, and eight cart loads of dung.

For the sixth year he again manured with twenty hogsheads of lime per acre, mixed with the earth and the rubbish of an old lime-kiln, at the expence of 1l. 19s. per acre: at another time, laying about twenty cart loads of earth and rubbish on a small portion of the field, where the natural soil was remarkably thin: the whole expence of manure for eleven years amounted to near 5s. 4d. per acre per annum. The ground is from five to twelve shillings per acre; he drilled two rows upon five feet ridges: his crops were from nineteen bushels to nine per acre.

The average of the eleven crops was fourteen bushels. When the crop was only nine bushels per acre, it happened from over-steeping the seed, and a very wet season following, the crops of wheat in the same parish, taking the good ground with the bad, and some run to 1l. an acre, for the eleven years, I have been well informed, were on an average not more than fifteen bushels an acre. By the drill mode there is a saving in seed of one bushel or more per acre, with the

advantage of a crop of wheat every year. Mr. Anderson mentions having horse-hoed, sometimes, only twice, which he says should be repeated at least four times: this he thinks necessary to that mode of husbandry.

In Mr. Duhamell's Husbandry, translated by Mr. Mills, are a great many valuable experiments on this husbandry, to which I must refer the curious, as too long to be here stated; and as they are in different measures, both of grain and land, which would embarrass the farmer.

But he clearly proves, by many experiments, that Mr. Tull's system of drilling and horse-hoeing was, without any manure, much superior to the old broad-cast; and also, that repeated successive crops of wheat were to be obtained, of which he gives many instances for five and six years.

He made also many comparisons between horse-hoed crops with three rows upon six feet ridges, and equally distant rows, or six upon six feet ridges; and shews the horse-hoed was superior to the equally distant rows; but the last always preferable to the common way of sowing. He had not seen Mr. Tull's latter publication, where he gives the preference to two rows, upon ridges of four feet eight inches and a quarter broad.

These examples are not on small trifling scales of a pole or a rood, but on whole farms; and he gives not only those of Monsieur De Chateau Vieux as well as his own experience, but that of a great many people of rank and fashion, as well as common farmers, and in different places of France as well as at Geneva.

Dr. Hunter, in his Georgical Essays, shews the advantage of drilling, and mentions some experiments of drilling turnips and barley. In one of turnips he says, "At the time of sowing, the land was extremely dry, which induced me to make the experiment with the drill plough, knowing that I could put the seed into the moister part of the soil, and that in the driest seasons, at the depth of two inches, we are sure to find a sufficiency of moisture to make the seeds germinate.

"In spring, 1769, I sowed an acre of barley on equal distant rows with the drill plough, in a field that was sown with the same grain, and upon the same day, broad-cast. The broad-cast took three bushels per acre, the drilled required only four pecks; the drills were at eight inches, and the seed was lodged about two inches within the soil.

"Reflecting on the experiments of the roots of wheat, I dug up some of the roots of the drilled and broad-cast barley, and was most agreeably surprised to find the cause of difference to be in the roots. The pipe of communication between the seminal and coronal root of the drilled barley, was consi-

derably longer than of the broad-cast, and upon that appearance I was convinced that the length of the ear, and the strength of the straw, principally depended. The produce of two hundred square yards of the broad-cast and drilled barley was thrashed: the drilled exceeded the other nearly one fifth in measure, and being better grain, weighed heavier at the rate of two pounds per bushel. When the ears were formed, the ear of the drilled barley was plainly distinguished to be near half an inch longer than the broad-cast.

"From the experience I have had of the drill sowing, I can recommend it as a most rational and judicious practice. Proper instruments are wanted to come cheap to the farmer, and to have the requisites of strength and simplicity. Should we ever be so happy as to see this difficulty removed, it is probable that all kinds of grain will be cultivated in drills: it will be needless to observe, that in this essay I only recommend the drill plough for sowing the land in equal distant rows, instead of distributing the seed by hand. The drill, when connected with the horse-hoe, constitutes quite a different system, which has great merit when judiciously conducted."

Mr. Young, on viewing Mr. Legrand's farm says, "He has the finest crops of furrowed barley I have seen in Kent; it will not be less than seven or eight quarters per acre. Last year he furrowed in barley on a clover lay, two acres and twenty-eight perches, produced twenty-two quarters three bushels; as in Mr. Legrand's letter, two years after, in vol. 4, of the Annals, he says, the twelve acres of sprat barley you saw in my fields, produced one hundred and three quarters four bushels Winchester, eight quarters five busnels per acre."

The field is now in barley again, and to all appearance the crop is equally good.

A gardener drilled a piece of ground with wheat in November, in 1783; it was one hundred square yards, and it had been potatoes in 1782; it was dug with a spade, he made a small track or furrow with a hand-hoe, and sowed the wheat by hand, and covered it with the hand-hoe. The seed was nearly the eighth part of a peck, the rows were at fourteen inches distance. In March it was hand-hoed, and a second time as soon as the weeds appeared, and the rows were weeded by hand, in the beginning of July, and a second time about the end of August, when in the shoot blade, and when the ear grew heavy, it was laid much, but not quite laid down: the ears were remarkably long, some from six to seven inches; the produce was two bushels, which is sixty-four after one: the seed one eighth of a peck per hundred yards, is at the

rate of nearly six pecks per acre, one bushel two pecks; and the produce at the rate of ninety-six bushels per acre. The crop was greatly too thick on the field.

An experiment of drilling was made in 1776, upon one acre three roods twenty perches; this, which was oats last crop, was ploughed in October, 1776, for wheat, and drilled after once ploughing. The drilled, at thirteen inches, cross the way it was ploughed: the drill was a hand-drill, which drilled one row; the seed was six pecks of red wheat; it was hand-hoed in March, and twice hoed in May and June with a hand-hoe: the produce was seventy-three bushels. Many of the plants were killed in the winter, which were replaced by transplanting, and the transplanted roots produced more ears than those originally sown. In 1777 this field was again drilled for crop 1778: it was ploughed once cross the drill, and harrowed and drilled across the furrow, which made the rows the same way as last year: it was drilled with a drill-barrow or hand drill, with two bushels of wheat, the drills at eleven inches distance; it was twice hand-hoed in the rows, and once hoed with a species of hand-schim. The produce was sixty-three bushels in 1778.

This was again drilled as before; one half of it was sown with grass seed immediately after the second hoeing, and was harrowed to cover them; and this half was hoed with the hand-schim: the seed and produce were the same as the preceding year. In 1780 the one half was grass, the other half was drilled with barley: this half was three times ploughed after the wheat, and drilled with three bushels of barley, the drills at eleven inches; it was twice hand-hoed, and once with the schim: this half produced forty-eight bushels of barley, crop eighty-one; this half was once ploughed after the barley, and drilled with three bushels of oats, the drills at eleven inches: it was twice hand hoed, and once with the schim. In 1782 ploughed up the grass and oat stubble once, and drilled both across the furrows; the drill eleven inches distant, with one bushel and two pecks of wheat; it was twice hand-hoed, and once with the schim: the produce was forty-seven bushels of wheat. In the year 1783, the one half was grass, sown with last crop of wheat, the other was potatoes planted after the plough, and where the ground was the poorest it had a little dung.

This experiment, continued for so many years, shews the great benefit of hoeing; as in six years it produced four crops of wheat; three of these were successive, and in that time two hundred and forty-six bushels one year barley, besides half an acre of oats.

The expence of hoeing which is less than common hoeing: it was upon a pole, like a Dutch hoe upon a wheel, which a man pushed before him, and which he could walk much faster with than a common hoe.—The man who made this experiment was a ploughwright, who made the drill and hoe for a person who tried experiments of drilling.

In the fifth volume of the Annals of Agriculture, Dr. Hinton made a comparison between wheat sown by Mr. Cooke's machine and by hand. Quantities of seed used per acre were, by the machine, one bushel four quarts, one half pint: by hand, one bushel, twenty-nine quarts, or seven gallons and a quarter. The machine-sown, was twice hoed by the machine; cost in the whole four shillings per acre, besides rent.

The weeding the hand-sown, cost six shillings and tenpence per acre.

The machine-sown produce per acre, forty-four bushels, two quarts.

The hand-sown, thirty-eight bushels, eighteen quarts.

The weight of the former, sixty-two pounds, two ounces, per bushel.

The latter, sixty-one pounds.

In the Farmer's Tour through the East of England, the author mentions a great variety of experiments of drilling all kinds of grain; wheat, barley, oats, beans, peas, and turnips; and says, in that journey he passed through a part of Kent, in which drilling most crops was common. He mentions above thirty crops, of which he gives the particulars. The average of the wheat drilled, is twenty-five bushels at different distances, from eight inches to two rows on five feet ridges. The average of the broadcast was twenty-four bushels. He states a comparison some of those gentlemen made between the drilled and broadcast culture, and on the average of all the grain, the drilled is superior. He says the real truth is, "that drilling and horse-hoeing on the Kentish system, of close drilling, are most advantageous; but the broadcast much exceeds the Tullian system of wide intervals. The method pursued in Kent, with respect to peas and beans, seems to deserve universal imitation.

"The same observation is undoubtedly to be made with respect to barley and oats on light loam, and dry enough always to be ploughed on the flat. The success there with this husbandry is so great, that no unfavourable conclusion can possibly be allowed.—Close drilling on dry soils is very beneficial, since the Kentish farmers have invented horse-hoeing schims that work in nine inches."

From the few experiments mentioned of horse-hoeing, it

is apprehended that of the Rev. Mr. Dean, and Mr. Butt's comparison, with equidistant, shews the horse-hoed to be more profitable.

ASCERTAINMENTS OF CROPS.

In 1786, Mr. Boot announces a clear profit over and above his usual profits of 500l. by drilling three hundred and sixty-eight acres, is 1l. 7s. 2d. superior profit.

In 1787, he announces a clear profit of 700l. over and above his usual profit; the produce of eleven different experiments, as follows, on four hundred and fifty acres, is

	PER ACRE. B.	G.
Beans - - -	50	0
Wheat after beans - -	36	0
Wheat after beans - -	50	6
Barley after turnips - -	75	5
Barley upon sandy land -	58	4
Peas after clover - -	51	4
Wheat after beans - -	45	5
Oats after barley - - -	75	3
Oats upon loamy soil - -	76	6
Wheat upon poor cold clay -	25	4
Wheat sown broadcast - -		

He mentions experiments by Sir William Jones.

	DRILL. B.	G.	P.
Wheat by the machine -	25	1	20
Wheat by the drill -	27	2	25
Barley by the machine after wheat	27	0	22

Twenty-four others mention their approbation of the drill husbandry. One gentleman, whose estate is seven hundred acres, has it now all under the drill.

Some say that the drilled is four bushels more than the broadcast. Some say it is twenty shillings in favour of the drilled compared with the broadcast; all the others allow the drill to be superior, and most of them have given over the broadcast.

Mr. Boot observes, respecting the following comparison, made in 1788, that towards the latter end of April, when the four acres drilled gained a decided superiority over the adjoining four acres broadcast, which was self-evident by the strength of the plants, and being of a darker green, he de-

termined to give the broadcast every advantage; and accordingly had it as well hoed as was practicable to be done, which evidently improved the broadcast crop, in which, if the weeds had been suffered to grow, the four acres drilled would have exceeded the four acres broadcast more than one third. He also remarks, that hoeing cannot be performed so effectually in a broadcast crop as in a drilled one, but that after all the care that can be taken, many weeds will be left growing.

For this comparison between four acres upon cold clay of drilled wheat, and four acres of broadcast, which was laid before the Society of Arts, Mr. Boot received a gold medal.

	PER ACRE. B. G. P.	FOUR ACRES. B. G. P.
The produce of the drilled was	29 6 3	119 1 4
Of the broadcast	23 4 5	94 2 4
Drilled superior -	6 1 6	24 7 0

	l.	*s.*	*d.*
Which is at 5s. 6d. per bushel, - - -	6	16	9¾
With six bushels saved of seed, which cost 7s. 4½d.	2	4	3
	9	1	0¾
Extra expences of drilling four acres at 6d. and extra hoeing at 1s. 6d. - - -	0	8	0
At 2l. 3s. 3d. per acre superior profit -	8	13	0¾

He states the produce of his crops upon three hundred and twenty three-acres, as follows: the quantity of each.—Wheat, seventy; barley, ninety; oats, seven; beans, fifty-two; peas, twenty-eight; turnips, seventy; coal, six acres: in all three hundred and twenty-three acres. He says he had not ascertained the quality as well as the quantity; but was informed by his neighbour, that last year the grain of his drilled crops, was superior in quality two pounds weight per bushel.

Mr. Boot states the produce of his crops.

	B.	G.	P.
1 Beans after barley, per acre - -	42	1	0
2 Ditto - - - -	38	0	3
3 Barley after turnips - - -	61	5	0
4 Ditto after peas - - -	52	5	4
5 Ditto, ditto - - -	66	4	5
6 Ditto, ditto - - -	62	6	5
7 Beans upon mixed soil - -	44	2	0

			B.	G.	P.
8	Peas after wheat	- - -	31	6	1
9	Peas after wheat	- - - -	42	2	3
10	Wheat after clover	- - - -	29	4	4
11	Ditto, ditto fallow	- - - -	31	2	2
12	Ditto after clover	- - - -	41	2	2
13	Oats after turnips	- - - -	62	1	3
14	Wheat after turnips }	The comparison mentioned of four acres }	Drilled	26	6	3
15	Do. do. }		Broadc.	23	4	5

Many other instances could be given of the superior produce of the drilled crops above broadcast.—" In the 12th volume of the Annals of Agriculture, is mentioned one, where the drilling equal distant rows is found superior, without the assistance of hoeing. Two acres were sowed, (part of a field) with three bushels of wheat per acre. The exact half was measured and drilled by Mr. Horne's five-furrow drill, with rather less than two bushels per acre. The drilled part produced three bushels per acre more than the broadcast, and one bushel of seed was saved; this was not hoed. The advantage of this arose solely from the regular distribution of the seed, and being placed at a proper and equal depth."

In the Annals of Agriculture are a great many instances of the superiority of the produce of this method above the broadcast; some four bushels per acre, some eight.

An instance is given of the saving of seed, by using a five-furrow sowing machine for two seasons, on three hundred and fifty acres of wheat, barley, oats, and saintfoin: the saving in seed was 78l. 5s. 6d. and many of the crops were much better than they otherwise would have been.

These instances, from the extensive practice of the drill husbandry, as well as from trials on a small scale, are from such authorities, that they cannot be controverted. Arguments will not contradict facts; neither will small or unsuccessful experiments prove that Mr. Tull, Mr. Crack, and the Rev. Mr. Deane, had not such crops as they mention; and a stronger instance than Mr. Dean's cannot be, that proved successful above twenty years. Small experiments and calculations from them, however accurate, although they shew what may be produced, are by no means to be depended upon, that such will be the produce of a field, or even an acre. I have frequently had a proportion of a field of broadcast, as well as a proportion of drilled, reaped and thrashed, but never found the calculation correspond to the real produce. Several calculations are here stated from actual experiments, to shew what very great increase grain will produce; but I shall

by no means desire any one to rely on a field producing at that rate, from calculations of small experiments; extensive practice is most to be depended upon.

The practice and experience of the method of close drilling, for several years past, has clearly demonstrated that a much smaller quantity of seed sown in drills, produces a much greater crop upon an acre than the broadcast, and that allowing more space increases the produce.

Drilling beans, and hoeing them, has been the practice for near one hundred years, and experience has shewn, that drilling them at eighteen inches, and horse-hoeing them, is much superior to narrower spaces hand-hoed. It is surprising that it has not occurred, that the effects must be the same with other grain, and that those who found the effect of wide intervals, and deep hoeing upon beans and potatoes, have not been induced to try the same method with other grain: having had such examples as Mr. Tull and his followers. The want of drills was long an obstacle which is now removed, and these drills have shewn that drilling and *hoeing* other crops, is equally advantageous as drilling and *hoeing* beans.

As we see so large crops stated by Mr. Tull in the horse-hoeing, and in the equally distant rows, crops so great as to produce fifty bushels per acre, or after one, we may expect an equal produce after one, or fifty in the horse-hoed. As three pecks being sown, is thirty-seven bushels and a half per acre, and upon ridges of four feet eight inches, is twelve ounces per yard of double rows: and as Mr. Tull stated his greatest produce from two hundred and fifty ears per yard, this is one third less, or one hundred and sixty-six ears and a half.

However incredulous farmers were some time ago, of the success of Mr. Tull's husbandry, (even some intelligent farmers who had tried it) yet the present practice of equally distant rows, at nine inches, which is practised to great extent, has shewn his first practice to be right, and his principles just.

Those farmers who follow this practice, have copied his first but not his last method, which he found the best, and recommends it as such, after thirty-nine years experience, and the last thirteen were successive ones, and eighteen years of horse-hoed crops.

Mr. Tull, and those gentlemen who followed his method, were gentlemen of credit and veracity, who may be depended upon: therefore the practical farmers may, with more confidence, follow his last method of horse-hoeing than his first; the more so, that they see the proof of the first method of

equal distant rows, from the late practice, of which they were equally incredulous: and from the improvements in drills, the hoeing husbandry has prevailed over prejudice so much, that of one construction of drills, there has been above six hundred sold within these few years, and above one hundred of them the last year, and mostly to practical farmers: which is a strong proof of their advantage, as practical farmers are so much convinced of the advantage of drilling, as to get the better of prejudice, and purchase an expensive machine.—That the success will not be equal on all ground of either equidistant rows, or horse-hoed, every farmer knows; and if the ground is bad, and not properly cultivated, it is not to be expected to be equal to good land.

Though I know it is difficult to break in upon habit, or alter custom; yet I hope these experiments and arguments will meet with a candid reception, and induce some to make a fair trial; for it plainly appears that this mode is by no means difficult, the produce greater, the expence less, than what can be effected by any other system.

For the convenience of the reader, I shall subjoin a compendious view of the experiments mentioned.

Successive Crops mentioned in Sir John Anstruther's Work.

Page	Crops.	
16	6	Mr. Tull mentions six crops without manure, ground in bad order.
17	5	Ditto, five crops.
24	5	Sir Digby Legard's comparison of drilling five acres.
26	8	Ditto, eight crops on five acres.
	8	Ditto, a comparison with seven acres.
26	7	Mr. Crack, near Dumfries, had seven successive crops.
27	20	The Rev. Mr. Dean, practised this husbandry above twenty years without manure, with about three interruptions by the neglect of servants.
30	6	Mr. Bult, of Kingston, on clay soil.
31	12	Mr. Hazard, mentions twelve years successive crops without manure, and in four of these years it produced eight crops.
32	4	The writer of these remarks tried four successive crops of wheat without manure or declining.
33	8	The Author of the scheme for drilling had eight successive crops, and the produce of the four last, which were wheat.

Page	Crops.	
33	11	Mr. Anderson mentions eleven crops, during which time it was manured twice.
37	8	An experiment of drilling equal-distant rows at thirteen inches, four wheat, two oats, two grass and potatoes.
23	13	Mr. Tull had thirteen successive crops of wheat without manure.

STATE OF HORSE-HOED CROPS.

	Bush.	Pecks.
Mr. Tull mentions the produce of only one; per acre - - - -	29	0
Mr. Crack states seven, at average -	25	0
The Rev. Mr. Dean, who drilled about twenty-four years, states only one, the worst he remembered for pulverizing, produced - - - -	24	3
The author of the scheme of drilling, four crops, one twenty-eight, one twenty-nine per acre; average - -	25	1
Late experiments five; average -	26	2

ENUMERATION OF PATENTS LATELY ENROLLED.

July 24, 1806. CHARLES De Berenger, of Hart-street, Bloomsbury, in the county of Middlesex, artist; for a certain animal substance, and method of preparing and manufacturing the same, whereby the said substance becomes applicable as a substitute for horse and other hair now used for the stuffing of cushions, mattresses, carriages, sofas, chairs, &c. and all other purposes for which flocks, wool, or hair, are now generally applied; communicated to him by a certain foreigner residing abroad.

.....24, Henry Fourdrinier, of Sherborne-lane, in the city of London, stationer and paper-maker; for a method of making a machine for cutting paper on a different principle from any hitherto used; communicated to him by a certain foreigner residing abroad.

.....24, Henry Fourdrinier, of Sherborne-lane, in the city of London, stationer and paper-maker; for a method of making a machine for manufacturing paper of an indefinite length, laid and wove with separated moulds; communicated to him by a certain foreigner residing abroad.

.....25, John Lamb, of the state of New York, in North America, at present residing in King-street, in the city of London, merchant; for improvements in and upon a machine or machinery for extracting fresh water from the salt water of the ocean, (by distillation), and other purposes, at sea or elsewhere; communicated to him by a certain foreigner residing abroad.

August 1, Richard Tomkinson, of the town of Liverpool, in the county of Lancaster, Salt Merchant; for a machine, engine, or instrument, for making white salt, and preparing brine to make white salt.

.....1, James Rawlinson, of the town of Derby, Gentleman; for certain improvements or apparatus commonly made use of as trusses or bandages for ruptures.

.....1, Peter Marsland, of Heaton Norris, in the county of Lancaster, Cotton-spinner; for an improved method of weaving cotton, linen, woollen, worsted, and mohair, and each or any of them by machinery.

..... 1, Thomas Fricker, of New Bond-street, in the county of Middlesex, Paper-hanger; and Richard Clarke, of Manor-street, Chelsea, in the said county, Paper-hanging Manufacturer; for a new mode of decorating the walls of apartments in imitation of fine cloth, without joint, seam, or shade, by means of cementing of flock on walls of plaster, wood, linen, or paper.

.....9, Ralph Walker, of Blackwall, in the county of Middlesex, Engineer; for an improved mode of making ropes and cordage of every dimension or size, by not only making all the yarns bear equally in the strand, and laying the strands uniformly in the rope, but also by making the rope or cordage from the yarns in the same operation.

.....20, Josias Robbins, of Liverpool, in the county of Lancaster, Millwright; and James Curtis, of the city of Bristol, Coppersmith; for certain improvements in boilers for manufacturing sugar, and in the mode of fixing the same, whereby much labour and fuel will be saved.

.....22, John Bywater, of the town and county of Nottingham, for an improvement in certain sails of ships and other navigable vessels, and the mode of working the same.

.....20, John Curr, of Belle Vue House, in the county of York, Gentleman; for a method of laying and twisting the yarns that compose a rope; by which method the yarns of a rope have a better and more equal bearing than they have in a rope made in the common way.

CRITICAL CATALOGUE.

Remarks on Live Stock, and Relative Subjects. Edinburgh and London, 1806.

THIS pamphlet is the work of a university profeſſor, in Scotland, intended, as it appears, for the uſe of the ſtudents in agriculture, the firſt noticewe have had of any college ſtudents of that ſcience. The publication conſiſts merely of extracts from Mr. Cline's obſervations, with annotations thereon, by Professor Coventry, who adopted this mode, becauſe Mr. Cline's memoir was not to be obtained in thoſe parts.

Our critical business with this tract will not be very conſiderable, excepting as to the extracts we may be tempted to make, in order to convince our readers, that we do not judge with partiality or harſhneſs. We refer to a late number for our opinion of Mr. Cline's obſervations, and the animadversions of Mr. Hunt thereon. The preſent we can do no otherwiſe than claſs with thoſe authors, that is to ſay, with ſuch as pretend to no other than a theoretical knowledge of their ſubject. Nevertheless, the practical is the only ſpecies of knowledge on this ſubject moſt particularly, on which any dependence can be placed, and the only ſpecies, on which any ſound or uſeful theory can be grounded. Perhaps there are no objects of human knowledge ſo difficult of acceſs to theoriſts, as thoſe of cattle, horſes, horſe-racing, &c. nor is the reaſon far out of ſight, although we muſt paſs it over here. There is another reaſon, which we ſhall paſs over likewiſe, we mean the reaſon why this rage of theorizing has been ſo much encouraged of late. It is supposed that general ſcience, but particularly anatomical ſcience, muſt qualify a man to judge of domeſtic animals, their uſes and powers, becauſe their dead carcaſes are the proper objects of ſcience. Such is a ſhallow ſuppoſition. All the uſeful principles relating to the feeding ſtall, the market, the ſtable, and the race-courſe, it is well known, have been derived from practice alone, and if ſome of our men of ſcience have been and ſtill are adepts in this way, they have not obtained their diploma, as *vere adepti*, from either the closet or the univerſity. Two curious examples of the infallibility of thoſe theoretic graziers and sportsmen, have at this moment preſented themſelves. Talking with a ſurgeon at one of the cattle ſhews, on the ſubject of the labouring ox, he remarked that Lord Somerville could never ſucceed in that purſuit, for want of a due knowledge of the anatomy of the parts, particularly of the bullock's chest and lungs. Nevertheleſs no thanks to anatomy, certain ſtandard rules have been long ſince laid down, which have proved altogether ſufficient to determine our choice of the proper variety of the animals, the particulars and bearings of which rules ſeemed totally out of this gentleman's comprehenſion. Another gentleman of the ſame profeſſion had, he pretended, delineated ſuch an aſſemblage of proportions, as muſt inevitably make a race-horſe; but no theory could inform him of the

actual fact that the moſt perfect ſymetry, fineneſs and lightneſs alone, are insufficient for that purpoſe: but experience has proved it to be so. The disadvantage of theoretical works, are, in the firſt place, their authors ſeldom having taken the pains of any very extenſive investigation, of courſe, being unaware of what has been already done, they are in the habit of bringing forward as novelties, or even new diſcoveries, principals, opinions, or facts, which have been long established, or worn thread-bare by former writers; and thoſe, from defect of experience they must probably apply in ſo vague and irrelevant a manner, that whilſt the well-informed ſmile, those in need of information are only inveigled ſtill farther from the objects of their pursuit. Points of the firſt conſequence are overlooked or misplaced, whilſt the greateſt ſtress is laid on others comparatively trifling. New theories are broached and recommended with that confidence, which ſo often and ſo lamentably accompanies the defect of having tried them, or being at all aware of their bearings and conſequences. Never, ſurely, ought there to have been leſs neceſſity for books of the above deſcription, than in the preſent times, when ſo many men of liberal education have turned their attention to rural affairs:

We muſt not, however, be understood as deciding that the speculations of Messrs Cline and Coventry are liable to all the above objections; on the contrary, we think that both thoſe gentlemen have written plauſibly and reſpectably on a ſubject, which as far as their information leads us to judge, they know only by report; and we entertain the moſt unfeigned respect for thoſe gentlemen, as of the moſt liberal character and of high eminence in their profeſſion below. To proceed with our extracts:

"Domeſtic animals of the ſame kind have not all the ſame character and properties. They vary in the general ſhape of their bodies, and in the conformation of particular parts; in size; in the quality of their flesh; in their degree of hardiness; in their rate of growth; disposition to fatten, &c. It is a matter, therefore, of vaſt conſequence to the husbandman, to be well acquainted with the particulars that ſerve to diſtinguiſh them. An accurate knowledge of these would enable him to ſelect those ſorts which are beſt adapted to his own ſituation or purpoſe.

"In chuſing live ſtock of any kind, great attention is requisite. Different ſorts excel differently. In none of them are concentrated all the moſt estimable qualities of its kind. A particular ſort may poſſeſs properties in a certain view valuable; yet these may be aſſociated with others that render it, on the whole, undeſerving of preference. It may have a good form, and be of an eligible size, and yet may be deficient in hardiness—may be enabled to endure great cold, or occasional scarcity of food; or, it may mature quickly with good keep and appropriate treatment, and in ſuch circumſtances be preferable to any other; but may ſtill prove inferior in value to ſome, which, though they may grow more ſlowly, are yet more inured to the hardſhips, the coarſe fare and inclemency of poor and expoſed ſituations.

"Without attending, then, to the combinations of peculiar qualities in the different ſorts, as well as to the moſt general diſtinctions of from and ſize which mark them, it may happen, that, for the ſake

of one or more good properties, husbandman may introduce among their own ſtock, ſome greater defects than what they meant to remedy, or than what previouſly ſubſiſted. Indeed intelligent breeders are now aware, that the different kinds of our domeſtic animals have 'points,' *i. e.* forms and proportions of parts, and likewiſe certain other properties, which are differently eſtimable; ſo that what would be an imperfection of one ſort, may be none in another, living in a different ſituation, or ſerving a different uſe;—or perhaps it might rather prove an advantage.

Though it is of importance then for husbandmen to inveſtigate all the diſtinguiſhing properties of the various kinds of ſtock which they may have occaſion for; yet as much advantage has been derived, in many ſituations, from attempts made to improve merely the *form* of the different kinds, or to acquire the beſt ſhaped ſorts for the purpoſe of breeding, rearing or fattening, it may not be improper, ſeparately, to ſolicit the attention of husbandmen to this ſubject. It is not, therefore, intended in theſe curſory remarks, to take particular notice of all the diſtinguiſhing properties in the different kinds of our domeſtic animals; but only to ſubmit ſome hints, chiefly concerning the ſhape or conformation of their body, in terms applicable to live ſtock in general.

Mr. Cline obſerves, that though the form of domeſtic animals has bren greatly improved, by ſelecting with care, for the purpoſe of breeding, thoſe poſſeſſed of the beſt ſhape; yet the theory of improvement has not been ſo well underſtood, that rules could be laid down for directing the practice in every caſe. He then mentions ſome particulars reſpecting the form of animals, and the improvements of which it is ſuſceptible, with the means of effecting theſe."

In a note, page 5, on 'points and peculiar properties,' profeſſor C. says—

"By the way, on this important ſubject, it might be here remarked, that in purſuing improvements in this branch of rural economy, or in relation to any particular ſort, what the moſt eſtimable properties are, can only be determined by patient obſervation and aſſiduous reſearch. Though certain breeds have appropriate forms and qualities, which have for ſome time been ſo ſteadily fixed as to be now well known and appreciated; yet, regarding all ſorts of live ſtock whatſoever, much remains ſtill to be inveſtigated. We are hardly *in limine* of the ſubject. It would require the united exertions of perſons living in many different countries, to effect improvements, to confer preciſion, and to advance our knowledge in this part of the profeſſion. In the mean time, every one for himſelf muſt endeavour to acquire all the information competent in his particular ſituation, or neceſſary for his particular purpoſe—he ſhould try by actual meaſurement to improve his eye, on which at laſt moſt perſons come to depend, and with ſufficient propriety, as it becomes wonderfully correct; he ſhould look through every market which he happens to be in; and he ſhould converſe, as far as convenient or becoming, with farmers and dealers of every ſort, many of whom carry about with them a great and uſeful fund of practical lore: he might, if he wiſhes for more general knowledge, peruſe Mr. Culley's

book on Live Stock, Mr. Marſhall's Rural Economics of different diſtricts of England, and the Reports to the Board of Agriculture, ſeveral of which contain peculiarly valuable, becauſe *minute*, information upon this ſubject; and beſides theſe ſources of information, he may attend to the Prints which have been publiſhed of the firſt breeds in England, and likewiſe to the Models now forming by Mr. Garrard and ſome others.

"It may be farther hinted, that the deſcriptions given in different publications, are to be received with ſome diſtruſt; for though they may be ſufficiently correct, in as far as they are taken from individuals high in repute, yet the preſent ſtate of this ſcience (for every branch of uſeful knowledge may be deemed ſuch, which reſts on a diſtinct ſet of principles, and which requires for its advancement their inveſtigation, in order to aſcertain their actual and relative influence), does not permit us to conclude, that the ſelection of ſuch ſtandards of compariſon has been at all ſo ample, or ſo unbiaſſed, as to afford ſtrong concluſions in their favour, or to furniſh claims for the general and indiſcriminate adoption of the forms deſcribed, as the chief not to ſay the excluſive, models of good ſhape. It would be carrying theſe remarks to the length of undue minuteneſs to deſcend to criticiſm on particular deſcriptions. It is ſufficient to mention, that thoſe which have been given of the beſt ſhaped of ſeveral of the moſt noted breeds, are in many particulars diſcordant. The conſtituents of excellence are, ſome of them, hardly aſcertained; but were they even fully known and admitted, individual animals rarely, if ever, exhibit, and perhaps equally ſeldom, can ordinary obſervers recognize, the whole."

The ſpeculations on horns and bones, page 14 and 16, are plauſible and demonſtrate the ingenuity at leaſt of the authors mentioned, if not their practice.

"Regarding ſome kinds of live ſtock, cattle for example, a queſtion has been moved—how far they could be advantageouſly reduced to a ſingle breed, *i. e.* whether they ſhould not all poſſeſs the ſame general form and properties, ſo far, at leaſt, as the latter are connected with the former: and attempts have been made to aſcertain, or enumerate, what might prove the chief points of excellence in a ſort calculated for general adoption. It has been ſuppoſed, that the principal purpoſes for which cattle are kept, ſuch as for their carcaſe, their milk, or their work, are in ſome degree compatible; and that a breed, now perhaps exiſting, may yet be diſcovered, or that one, by croſs-coupling, ſelection, or other means, may be procured, which ſhall anſwer not only for theſe various purpoſes, but likewiſe for every diverſity of ſituation; their ſize, activity and hardineſs only varying, ſo as to ſuit the circumſtances of different grounds, whether upland, hilly and poor, or low-lying and fertile.

"This general applicability, however, were it even found to take place, in ſo far as relates to the *form* of the animal, ſtill would not diminiſh the neceſſity of inveſtigating the character of domeſtic animals in *other* reſpects. It has been aſcertained from ſome late obſervations, and the diſcovery is of importance, that no particular

form is exclusively connected with all or any of the most valuable properties otherwise; or that a beautiful and useful shape may be possessed by animals of any size, hardy in every degree, and capable of being reared in different situations, and either with poor or with rich food.

"Though perhaps the qualities of activity and strength may be found in animals possessing different forms, and may be conjoined with a shape otherwise vuluable, yet *size* is a circumstance which attaches to particular breeds in such a way as not to be rapidly alterable, if due regard be had to the healthy state of the stock. Neither are the properties of general hardiness, and a disposition to early maturity, such mutable traits of character, as would enable the same breed to suit with different situations and circumstances, or thrive equally well in them. Indeed, in these and other respects, a diversity of breed or character would become highly requisite, and even necessary. Besides, the formation of distinct races, by animals occupying different situations, and being subjected to the influence of different powers, or different modes of treatment, though a process slow and gradual, and perhaps often unobserved, is altogether unavoidable; and it is, in some measure, happily so, that the land may be the better or more easily replenished. The discussion, then, about the practicability and propriety of having only a single breed, in a greatly diversified country, such as Britain, must be restricted merely to what relates to the general *form* of the stock. Probably the very attempt to render the whole alike in other particulars, would not only prove as abortive as it seems unnaturul, but might be attended with mischief. It might produce a mediocrity, not of size only, but of character otherwise, which the most indiscriminate and unskilful breeding only could rival. It would likely soon furnish that deplorable display of ignorance and imperfection in husbandry, which the rudest districts exhibit, where science affords no light, and art no useful result.

"The kind of food given to animals, should be suited to their ages.—In the habit of very young animals, there abounds, and seems necessary for their welfare, a great proportion of fluid; and therefore more succulent food may be preferable for such; but when more advanced and vigorous, the digestive powers being stronger, and time being requisite for the process of growth, provision less immediately nutritious, or of a coarser quality, may suffice.

"To give rich food to young growing stock must be wasteful in general, or with the more ordinary breeds, and indeed can hardly in any instance be of use, excepting in the case of the more improved and delicate sorts, or when it is wished, with its assistance, to render any race finer than it originally was. This last effect of pampering is perfectly well understood by the breeders in certain districts of Great Britain, in the treatment of the best sorts of cattle and sheep; and it applies, more or less, to all descriptions of animals.

"The effect of pampering, no doubt, is considerably different on horses from what it is on these kinds of live stock; but this circumstance can perhaps be accounted for by the different ways in

which theſe animals are otherwiſe treated. In the latter, cattle and ſheep, the full and rich feeding, with the want of exerciſe, has a tendency, beſides cauſing them to mature early, to make them accumulate fat in all parts of their body, and, in certain breeds, in ſome parts more than in others. This laſt circumſtance, however, as well as the increaſe of ſize in particular parts of their body, is very much the conſequence of ſelecting and coupling together animals that perhaps at firſt accidentally acquired a particular conformation or ſize of certain parts. (By *accidentally*, is not meant that the change aroſe without a cauſe, but only without any well-marked or aſſignable cauſe.) In the caſe of horſes, the exerciſe which they are early ſubjected to, tends to preſerve them from ſo great a change as happens to the others. The rich feeding, indeed, gives them an early tendency to plumpneſs, and perhaps fatneſs; but the exerciſe and the dreſſing which they receive contribute to preſerve their form, to check inordinate obeſity, and to improve their activity.

"Such beneficial effects of well directed exerciſe on the finer breeds of horſes, have been abundantly certified, and are really important facts. Theſe ſorts, equally with bullocks, fatten quickly, on having proper food ſupplied to them, and on being obliged to take reſt in houſe; for their ſpirit ſeldom allows them to enjoy this in the field. Both of them have likewiſe a tendency to fatten earlier in life, than the coarſe breeds, on their getting the requiſite and full ſupply of food ſuitable for them. Even cattle, and ſuch other animals of the *Bos* tribe, when well fed, trained and ſubjected to exerciſe or dreſſing, much in the ſame manner that horſes are in this country, acquire preciſely the like well-formed ſhapes, and equally active habits. This has been aſcertained from different accounts to be the caſe in many foreign countries, where, as among the Targunian, Nogayan and Koundour Tartars, bullocks are uſed for riding; or, as in Caſhmere, where they are uſed both for riding and for drawing coaches; or, as in Hindoſtan, where they draw the hackrees (a ſort of coaches) and 'maintain their rate againſt horſes at full trot;' or, as among the Hottentots, where they are trained to gallop, and even to run down the elk-antelope, *antilope orcas*. All that is ſaid about the unfitneſs of bullocks for labour, and all difference between the pampering this ſpecies and horſes, might be referred to the kind and proportion of training and exerciſe which either race enjoy, or are made to undergo in early life. By the way, too, there ſeems to be very little meaning or weight in the argument taken againſt the uſe of bullocks or other *pecora*, for drawing in the plough or carriages, from the circumſtance of their having four ſtomachs, and their being of the ruminating claſs of quadrupeds; for ſome of the fleeteſt and longeſt running animals in nature, are of the ſame deſcription, as the ſtag, *cervus elaphus*; the roe, *cervus capreolus*; the rein deer, *cervus tarandus*; the chamois, *antilope rupicapra*; the antelope *capra dorcas*; the hare, *lepus timidus*, and many others."

The Devonſhire breeders will not thank Mr. Cline for his advice, to improve their famous breed, by croſſing it with Galloway Scots. They will probably tell him, they could effect his purposes, did they

approve ſuch, without ſtirring from home. The charge brought againſt the Devon Cattle muſt nevertheleſs be acknowleged valid, if not new. The remark page 32, which we have often ſeen before, about the heavy cart horſe, and the ſlender mare of much blood; is one of those harmleſs remarks, which so well characterize the remarker. We apprehend even in ſuch a croſs, much would depend on the skill of the breeder; and with reſpect to what follows on the ill ſucceſs of certain attempted improvements, nothing can be determined independently of data on the character and experience of the improvers. The aſſertion, that 'any mongrel breed, if indifferently managed, eſpecially at firſt, readily becomes diſeaſed and deformed,' is curious, and perhaps in the true ſcientific ſtyle. The pureſt breed may eaſily become deformed by indifferent management, but under good and wholeſome, being liable to diſeaſe, is not ſurely the most forcible objection to mongrels.

Mr. Cline says, "The great improvement of the breed of horſes in England, aroſe from croſſing with those diminutive ſtallions, Barbs and Arabians." True, yet that is but a diminutive part of the the truth, and were Mr. Cline to eſtabliſh a breeding ſtud on that plan, namely to employ Barbs or Arabian ſtallions, we conjecture, that neither his profit, nor reputation, as a breeder, would ſuperabound. Our experience does not prompt us to recommend the ſpeculative ideas on croſſing, to be found page 38. The idea of the general adoption of one ſingle breed only, page 25, has more curioſity than uſe; and the question on permanent properties in animals, would be better diſcuſſed by ſuch as have an intimate and practical knowledge of ſuch peculiarities.

We leave the reader to make the moſt profit he may of the following note.

"It is chiefly in ſuch ſituations, paſtures of a middling deſcription, growing herbage more abundant in quantity than valuable in quality, and preferably adapted to rearing and not fatting ſtock, that the large kinds are found beſt to anſwer; and in ſome caſes, as on ſound, dry-bottomed ſoils, able to bear their tread in all ſeaſons, to return rather more than the ſmaller. Were lands of that deſcription to be filled with a greater number of a leſs-ſized breed, admitting it to be of an equally good ſhape, and as hardy and thriving, a good deal of attention would be requiſite in ſtocking them. Should the ground be underſtocked with ſuch, the herbage would be liable to be eaten leſs evenly than with the former: and ſhould it be fully ſtocked, ſo as to avoid this kind of detriment, and to be more cloſely depaſtured, then the herbage itſelf is apt to ſuffer and to riſe up more ſlowly than otherwiſe—a portion of the foliage, not over-cloſely cropped, left on any plant, promoting much the vigour and growth of what is only beginning to ſpring from the ſame roots. Other very ſerious diſadvantages likewiſe attend the cloſe feeding of inferior paſtures. Wherever the graſſes and the more valuable ſpecies of plants are in a low, enfeebled ſtate, the more hardy and worthleſs vegetables are apt to prevail. Even 'fog,' the *hypna* and moſs plants riſing in ſuch grounds, come, frequently in a very few years, to do much miſchief; for though comparatively pun

peſts, yet as they vegetate in the cold and moiſt ſeaſons of the year, the ſpring and autumn, when the better ſpecies are but beginning to grow or are declining, they greatly check the latter, and in many inſtances ultimately extirpate them.

" If ſuch are apt to be the bad conſequences of depaſturing inferior but luxuriant graſs-lands with ſmall animals of a coarſe breed, the evils would be ſtill more ſtrikingly felt with a ſmall and fine ſort. Were ſuch grounds to be grazed by a parcel of the latter, when of a full age and intended for fattening, and were they with this view to be lightly ſtocked, ſo as to allow the animals a fuller ſupply or a better choice of food, the general produce on the land would be less equally eaten than with the ſmaller ſorts of the coarſer breeds; and the ſame extent of ſurface might yield greatly less, than were the use of the paſture more appropriate, or an inferior ſtock, and that alſo somewhat large, to be preferred. Where a refiner or early fattening ſort, of whatever ſize, to be put on the ground in ſuch numbers as to be forced, for their ſuſtenance, to conſume fully the produce and leave the ſurface nearly bare, they might be found not to thrive, and do rarely, in ſuch circumſtances, anſwer the purpoſe of the grazier. At any rate, they would be found to return less than a coarſer ſort, and perhaps even less than a larger animal of that inferior ſort

In the P. S. are ſome intereſting facts from the laſt vol. of the Bath Societies Papers. To the authority of Mr. Charles Gordon Grey, as a practical and experienced breeder and cultivator, we can generally, have no reaſonable objection, yet on that moſt intricate queſtion of SIZE, we fear he is far too ſanguine. We will go farther; if Mr. Grey thinks he has ſettled the point, we are convinced he has deceived himſelf. The article of ſheep may have helped towards this deception. We have experienced full often, indeed in the field as well as the ſtall, the fallibility of the following axiom of Mr. Grey—" In ſtall-feeding whatever may be the food, the ſmaller animal pays moſt for that food." We ſhould like to know in what manner Mr. Grey would arrange an experiment of that kind. Nor have we found, after a multitude of trials, that ' the ſmaller pigs ever pay moſt for their food." As Profeſſor C. proceeds, he will find plenty of anomilies in this ſcience. We have remarked that in page 27, it is aſſerted, that if a hornleſs ram be put to horned ewes, the produce will be generally hornleſs; yet in the next page we find, that the hornleſs galloway bull failed in that reſpect. The Profeſſor queſtions whether the horns of the Devon cattle could be removed by a croſs, We will venture to aſſert there is no doubt in the matter, provided the bull be purely a polled or hornleſs one, and the breeder have ſufficient ſkill and attention in the management of the intercopulations.

HISTORY

OF

Agriculture.

LONDON, SEPTEMBER, 3.

Wheat is at 10. and 6d. in the Coventry market; 9s. at Northamton; 10s. and 10. at Warwick:

Hops vary in price, from 5l. to 7l. per cwt

120,000lb. of cotton-wool were imported laſt week into the port of London.

At Horncaſtle fair, which took place on Thurſday and Friday ſe'nnight, horſes were ſold 20 per cent. cheaper than laſt year's fair at the ſame place.

New Leiceſter wool, ſorted, is reckoned fairly worth 2l. ſterling per tod.

Mr. John Wilſon, of Moekerken, in Loweswater, has reaped this harveſt from 1 grain of barley, 44 ſtems, yielding 1538 barley corns

This ſucceſsful harveſt is lucky to the proprietors of orchards in Devonſhire. The curious and correct ioformation of Mr. C. Cooke's elegant volume on that county, inſtructs us, that an orchard of three acres, will yield 80 hogsheads of cyder, at 1l 1s. per hhd

The plantations in Eaſt and weſt Kent, never wore a more beautiful aſpect, the natural reſult of the late genial ſhowers, which were ſucceeded by uncommonly fine weather: in ſhort, preſent appearances preſage to the planter an abunded crop.

The harveſt has proceeded ſo rapidly through all the principal corn diſtricts, that but little of the white crops remain unhouſed, or unſtacked. —The new Wheats brought to market have been very good, weighing conſiderably beyond the ſtandard weight. Thoſe in moſt of the ſhires are remarkably fine in quality, as well as large in produce.—The barleys are improved to a full average crop, but the oats, on account of the long drought in the latter part of the ſpring, are found defective in bulk.—Peaſe are a yielding productive crop, and beans, in ſoils genial to them, bid fair to riſe well; indeed the year as proved a favourable one to every article of the pulſe kind.—The turnips have every where planted ſo well, and continued ſo t ri ty that an abundence produce of ſeed may reaſonably be looked for. The northern crops are backward, and not of ſo good a promiſe in general as thoſe of the laſt ſeaſon.—The grazing diſtricts have been much benefited by the fine rains in the early part of the month.—The hop plantations of Suſſex and Kent have abundant crops, and thoſe of Worceſter, Hereford, &c. are likewiſe ſo good, that the duty is ſpeculated upon as the largeſt within the laſt ſeven years.—Smithfield has had large ſupplies of all ſorts of meat, at reaſonable prices. The cattle fairs of the Eaſtern and midland counties, have had great ſhows of live ſtock, which have gone off but ſlowly, on reduced terms. Sheep and lambs are likewiſe cheaper. Hogs and ſtore pigs are alſo cheaper. Uſeful horſes, both for draught and ſaddle, continue dear. The wool market remains dull at laſt months prices.

SEPTEMBER, 10.

Engliſh wheat in the London market, is now at from 2l. 16s. to 4l. 8s per quarter. Barley, 2l. to 3l. 5s. and 6d. Oats, 1l. 2s. to 1l. 14s. Rye, 1l. 19s. to 2l. 8s.

The board of agriculture has offered: 1, a premium of, from five to ten guineas for the best model for a labourer's cottage, on an ſcale of a inch to a foot, and accompanied with an eſtimate of the expence: 2, fifty guineas for the most ſatisfactory ſeries of experiments in the snbſtitution of oxen or ſpayed heifers for horses, in the common horse carts used in the conveyances by carriers along the roads: 3, for the discovery of a principal on which the draught of oxen to carriages, may be lightened; twenty guineas, the amount of a legacy, left for this use, by the late Colonel Goate, of Brent Eleigh, in Suffolk.

The annual meeting of the agriculture society of Workington, in Cumberland, takes place on Friday the 3d of October next. The præmia laſt propoſed, and not yet adjudged, will be then diſtributed.

A perſon in Mancheſter has kept a toad fourteen weeks, without nouriſhment. The reptile is ſtill alive and well.

A muſhroom was lately plucked in a field adjoining to the uquaduct bridge over the Lune, which weighed one pound; was two feet eleven inches in the circumference of its head, and measured seven inches round the ſtem.

There are, in the isle of Cape Breton, 2,500,000 acres of fertile arable land.

At the Thetford Lamb fair, the following prices were obtained: For J. Moseley's, Esq. flock of down wether lambs, 22s. 6d. ditto half down and Norfolk ewes and weathers, 22s. G. R. Eyre's, Esq. half-bred Leicester and Norfolk ewes and weathers, 21s. B. Howard's esq. Southdown ewes and weathers, 28s. J. Bevan's esq. Southdown wealhers, 22s. J. Dersley's, esq. flock of half-bred down and Norfolk, 23s. Mr. Daniel Sewell's Southdown weather lambs, at 23s. 6d., ditto his half-bred Leicester and Norfolk ewes and weathers, 26s. Mr. J. Manning's flock of half-bred down, and Leiceſter, and Norfolk, at 21s. Mr. Weſthorp's half-bred down and Norfolk ewes, at 25s.

Prices of leather at Briſtol fair:---Crops 50 and 60lb. per hide, 23d. 28. ditto ditto 40 and 50, 21d. 22d. Ditto 30 and 40 19d. 21d. Beſt Engliſh dreſſing hides, 20d. 21d. Inferior ditto, 18d. 19½d. Dutch and Iriſh ditto 16d. 17½d. Pattern skins 3s. 5d. 3s. 7d. Horſes hides 20d. 23d. Buffs, 14d. 16d. Raw Goods. Prime (pickled) Buenos Ayres Hides 7d. per lb. Brazil's 6½d. Peru Hides (21lb per hide), 7d. Salted veal skins, 9½d. Salted calf ditto, 6d. Dry ditto, 12½d. per lb. Newfoundland ſeals 23l. per cwt.

SUSSEX, SEPTEMBER 20, 1806.

Some ages ago, the Iron Furnaces of this country furniſhed a large portion of the beſt iron produced in Britain; the high repute which it had in the market, was by ſome aſcribed to the charcoal which was uſed, inſtead of pit or foſil coal, in its fuſion and preparation; but it was more probably owing to the peculiar quality of the ores found in this country, and this circumſtance has givsn ſuch intereſt to the ſearches which have for ages paſt been making in this country to diſcover the veins of foſil coal, which the learned in theſe matters tell us, are here plentifully to be met with, but at what depths, they are by no means agreed. Some months ago an Act of Parliament paſſed for enabling the Truſtees of the young Duke of Dorſet to leaſe a part of his eſtate, laying by the ſea-ſide, on the S. E. ſide of the town of Bexhill, in this county, to a Company which has been formed for the purpoſe of working the coal therein, under the direction of Mr. James, a miner of the firſt repute: theſe works have proceeded with a degree of ſpirit and enterprize, which has placed all the eaſtern parts of this county on the tip-toe of expectation as to the vaſt benefits they are to receive, not only in the ſupply of coal for domeſtic uſes, but as the means of again open-

ing their dormant iron furnaces. So little doubt of ſucceſs is entertained, that extenſive ſtabling have been built of brick, in the moſt ſubſtantial manner, and horſes for the ſuperintendants and workmen in the intended mines, on a ſpot where formerly no buildings were ſtanding. Two wells or ſhafts have been ſunk, each about eighty feet deep, principally through ſand, or ſoft ſand-ſtone rock, ſome of the layers of which are ſaid to contain impreſſions of vegetables, like Feras, conſidered in moſt parts of England as a certain indication of coal veins being at no great diſtance. No other appearance of coals have yet, it ſeems, been met with in ſinking the ſhafts, but the principal expectations are formed on the report of ſome experienced practical miners, who bored in this place ſome months ago, and reported that their auger paſſed through a four feet vein of coals, at one hundred and ſixty five feet deep. The water comes in ſo plentifully that the ſteam-engine working in one of the pits, and a horſe-gin, with buckets in the other, to aſſiſt it, were barely able to keep down the water ſome days ago. A ſecond ſteam-engine is about to be erected, it is ſaid, and that no expence whatever will be ſpared, in exploring a treaſure ſo valuable for this part of the county, as a four feet vein of coals, and doubtleſs the gaining of this, would ſecure other and perhaps thicker veins below it. We ſincerely hope that no circumſtance will occur to damp the ardour of the parties in this intereſting ſearch after an article of ſuch general intereſt as foſil coal.

The harveſt weather is nearly ended in the ſhire of Moray, the moſt fertile in the north eaſt of Scotland. The produce is large and of excellent quality.

Seven farms, the property of one nobleman, all in Galloway, North Britain and 2203 Scottiſh acres, were lately let at 7440l. rack-rent.

At Gile's Hill Fair, near Wincheſter, on Friday laſt, there was a large quantity of cheeſe, the ſale of which was dull, at the follwing prices :--- Fine old, 60s. 70s. to 72s. prime, 75s. per cwt. Beſt new, 52s. to 58.s Half-skim 44s. to 49s. ; Inferior, 30s. to 35s. Some very prime dairied fetched rather higher prices than thoſe quoted ; but the ſale was languid the whole day, and, at the cloſe, nearly one third of the quantity pitched; remained unſold. This was diſpoſed of the following morning at low prices, and some inferior skim went as low as 14s. There were few horſes, and good ones commanded high prices.

Wilton St. Giles's Great Sheep Fair, near Salisbury, was likewie held the ſame day, when the number of Sheep penned was 52,000. The Sale was briſker, and the prices on an average, were full 2s per head dearer than at any of the late fairs. Lambe fetched from 87s. to 27s. per head ; Ewes, from 28s 40s. ; and ſix-teeth weathers from 34s. to 60s. Mr. Hayden obtained the high price of 42s. per head for 200 down ewes. The demand was in favour of the real South downs. Mr. Whale of Harrow, Middleſex, bought 3000 ſheep, and he declared, that of 1600 lambs he had purchaſed, not one of them was of the Wiltſhire breed. There was the greateſt and beſt ſhow of the Merino, South-down, Leiceſter, and Cotſwold Rams, that ever was exhibited at any fair in the weſt of England. A few horſes of the cart kind fetched high prices ; but there was a very in different ſhow of either ſort.

At Stirbitch Fair on Friday, the prices of cheeſe were, Derby 65s. to 66s. per cwt. and Cottenham 7s. per ſtone of 14lb.—Hops in pockets, 5l. to 5l. 12s. ; Eaſt Kent 6l. In bags, 4l 10s. to 5l. The ſhow of horſes was rather large, for the beſt of which high prices were obtained.

LONDON PRICES OF GRAIN for *Sept.* 1806.

MARK LANE, *Monday*, Sept. 1, 1806.

Our market was again ſparingly ſupplied with Wheat this morniug, but which circumſtance did not tend to enhance prices beyond thoſe of laſt Monday.—Fine Flour, however, has riſen to 75s. per ſack.—The other articles of Grain have advanced generally.—Barley and Malt are both dearer, having very ſhort ſupplies.—White Peaſe, likewiſe, (there being few on ſale) and Beans, of both ſorts, are all of them higher.—In the Oat Trade we have not many freſh arrivals, the ſales of which are without any material alteration.

Price of Grain, on board Ship, as under.

Wheat	56s 66s 76s	White Peas	45s to 60s od	Ticks, new	36s to 42s
Fine	78s to 82s	Boilers	66s to 72s.	Ditto Old	—s to —s
Superfine	84s to 86s	Suffolks	74s	Oats	22s 27s to 31s
Rye	36s to 43s	Grey Peas	38s to 42s	Polands	—s to 34s od
Barley	36s to 42s od	Beans, new	44s to 52s 6d	Oats for ſeed	—s
Malt	68s 75s od	Beans, Old	—s		

Monday, Aug. 8.

We had a good ſupply of Wheat for this morning's market, and as there can now be no apprehenſion of the want of Bread Corn, prices have declined 3s. and 4s. per quarter in the ſales of fine ſamples, and more on thoſe of ſecond and ordinary quality.—We ſtill remain ſhort of Barley, with an increaſe in price, and ſhall do till the new crop finds its way to our ſtands.—Peaſe, of the various kinds, continue dear, but they are not higher than laſt week.—Beans, of each ſort, are rather declining in value; and Oats, of which we have large arrivals, are likewiſe cheaper.—Fine Flour has fallen back to 70s. per ſack, and Rape Seed is conſiderably lower.

Wheat	50s 60s to 68s	White Pease	40s to 60s	Ditto, old,	—s
Fine	—s 70s to 78s	Boilers	66s to 72s	Ticks, new	34s to 42s
Superfine,	80s to 84s	Suffolks,	—s to 74s	Ditto, old,	—s
Rye	38s to 43s	Grey Peas	36s to 43s	Oats	20s 24s to 30s
Barley	36s to 43s	Beans, new	38s to 53s	Polands	—s to 34s od
Malt	66s to 75s				

Monday, Aug. 15.

From the ſtill prevailing demand for fine old Wheats to mix with inferior ſorts, choice reſerved ſamples of the former are almoſt out of price, while the latter have acquired but a trifling advance upon laſt Monday's currency.—New Rye, with Barley and Malt, may be taken at the prices at foot, and which will be found rather higher.—Peaſe have rather declined; but Beans, of both ſorts, are dearer.—Of Oats we have but few freſh ſupplies; and, in point of value, they remain nearly the ſame as laſt week.

Wheat	50s 65s 68s	White Peas	46s to 58s	Ditto, Old	—s
Fine	70s to 82s	Boilers	68s to 72s	Ticks new	36s to 43s
Superfine	84s 86s	Suffolks	—s to 74s	Ditto, Old	—s
Rye	44s to 48s	Grey Peas	33s to 44s	Oats	22s 26s to 32s
Barley	38s to 45s	Beans new	39s to 51s	Polands	—s 34s 6d
Malt	68s to 76s				

Monday, Aug. 22.

Since laſt Monday there has been ſome deduction in the ſales of Wheat, and this morning ſamples of fine quality ſold for more than named in our figures; towards n on, however, the ſales became heavy, and cloſed nearly on the terms ſpecified below. Five guineas per quarter was aſked, and given, for new wheats for ſeed: and Fine Flour has riſen to 75s. per ſack.—Barley is not very plentiful, and prices higher than laſt quoted.—Malt the ſame.—In the articles of Peaſe and Beans, (they affording no ſcope for particular remark) their value may be aſcertained from our under-mentioned currency.—Oats are dearer, with but few freſh arrivals.

Wheat	58s 65s to 68s	White Pease	40s to 56s	Ditto, old	—s
Fine	70s to 82s	Boilers	62s to 68s	Ticks, new	44s to 45s
Superfine	84s to 88s	Suffolks	70s od	Ditto old	—s
Rye	44s to 48s	Grey Peas	40s to 46s od	Oats	24s 29s to 31s
Barley	42s to 48s	Beans	42s to 50s od	Polands	—s to 36s 6d
Malt	74s to 80s od				

AVERAGE PRICES OF CORN, by the quarter of eight Winchester bushels; and of OATMEAL, per Boll, of 140 pounds Avoirdupoise.

From the Returns received in the Week ended, Sept. 20, 1806.

INLAND COUNTIES.

COUNTIES.	Wheat.		Rye.		Barley.		Oats.		Beans		Peas.		Oatmeal	
	s	d.	s.	d.	s.	d.	s.	d.	s.	d.	s	d.	s.	d.
Middlesex	85	8	44	0	42	11	35	10	46	11	53	6		
Surrey	87	6	46	6	43	0	32	6	46	0	51	0		
Hertford	73	3	41	0	36	6	27	0	37	0	37	3		
Bedford	70	3	46	9	35	10	29	3	43	0	45	4		
Huntingdon	74	2			34	6	25	4	39	11				
Northampton	74	4	52	0	41	3	30	5	43	10	42	0		
Rutland	82	0	48	0	41	6	25	6	46	0			62	0
Leicester	77	11	42	4	37	6	27	7	42	4	39	6	39	9
Nottingham	83	6	53	6	46	0	30	2	47	8				
Derby	87	8					31	0	50	0	49	0	38	2
Stafford	84	4			42	0	32	11	52	3			39	9
Salop	81	8	56	0	46	0	29	3			48	0	66	4
Hereford	80	3	48	0	40	8	28	8	45	11	42	5	64	11
Worcester	86	10			47	8	35	6	51	4	46	5		
Warwick	86	7			47	6	34	1	54	11			47	10
Wilts	76	4			44	4	32	6	55	10	44	0		
Berks	83	10	51	0	40	6	32	5	50	3	49	11		
Oxford	79	11			42	1	30	8	45	10	49	7		
Bucks	82	5			36	9	31	4	46	0	45	0		
Brecon	92	9	57	7	44	6	32	0					50	10
Montgomery	82	8			43	2	26	10					57	2
Radnor	91	2			40	2	28	8			35	2		

Maritime Counties.

Essex	82	0	47	6	41	9	38	3	44	3	48	0		
Kent	90	6	43	0	36	6	38	5	43	0	56	0		
Sussex	85	8					40	8						
Suffolk	75	0			37	2	37	10	39	10	54	11		
Cambridge	71	8	39	0	38	0	22	4			42	0		
Norfolk	69	0	42	0	33	9	25	2	36	6	45	7		
Lincoln	73	9	46	0	36	7	25	4	44	5				
York	75	5	46	3	34	10	27	8	43	8	64	0	41	0
Durham	76	11					29	7						
Northumberland	77	1	47	0	34	10	29	6	40		38	0		
Cumberland	79	5	61	4	48	5	32	10						
Westmoreland	88	9	62	0	49	4	33	10					23	4
Lancaster	74	8			39	1	28	5	48	11			22	7
Chester	76	7					27	2					24	9
Flint	76	11					24	10						
Denbigh	84	5			55	10	28	9					50	10
Anglesea	70	0			36	0	21	0						
Carnarvon	77	4			43	0	20	10					49	3
Merioneth	86	8	64	0	64	0	26	0					48	6
Cardigan	85	10					24	0						
Pembroke	66	6			35	8	20	0						
Carmarthen	78	0			48	8	18							
Glamorgan	77	4			40	0	23	6						
Gloucester	84	4	50	6	41	2	31	6	49	3	44	4		
Somerset	83	0			41	0	28	3	50	0				
Monmouth	90	7					31	0						
Devon	82	6			30	9	30	4						
Cornwall	84	2			35	10	25	7						
Dorset	76	5			32	0	38	8	48	0				
Hants	78	7	43	6	38	0	35	8						

Prices of Hops, Meat, Seed, Leather, Tallow, &c. for Sept. 1806.

Price of Hops.	1ſt Week	2d Week	3d Week	4th Week
Bags.	s. s.	s. s.	s. s.	s. s.
Kent — —	90 to 116	90 to 116	80 to 94	80 to 94
Suſſex — —	90 to 105	90 to 110	75 to 88	80 to 90
Eſſex — —	90 to 105	90 to 110	70 to 86	80 to 94
Pockets.				
Kent — —	90 to 112	90 to 120	80 to 100	90 to 112
Suſſex — —	90 to 100	90 to 112	75 to 96	90 to 112
Farnham — —	120 to 140	140 to 160	140 to 160	140 to 160
Seeds.				
Broad Beans, (per quarter)				
Long Pods				
Tares — —				
Rye Graſs — —				
Carraway, (pr cwt.) —				
Coriander —				
Treſoil —				
Red Clover — —				
White ditto —				
White Muſtard Seed, pr bu				
Brown ditto				
Canary Seed				
Turnip, —				
Rape Seed, (per laſt) —				
Meat at Smithfield,				
To ſink the offal, p. ſt. 8lb.	s. d s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d
Beef — —	4 0 to 5 0	4 0 to 5 2	4 0 to 5 2	4 0 to 5 0
Mutton — —	4 4 to 5 0	4 4 to 5 0	4 4 to 5 4	4 4 to 5 2
Veal — —	4 6 to 5 4	4 8 to 5 8	4 8 to 5 8	4 0 to 5 0
Pork — —	5 4 to 6 4	5 0 to 6 0	5 4 to 6 0	4 8 to 5 4
Lamb — —	4 8 to 5 8	5 0 to 6 0	4 8 to 5 8	4 8 to 5 6
Head of Cattle—Beaſts about	1,800	1,8 0	2,200	2,000
Sheep and Lambes	16,000	16,500	19,000	18,500
Price of Leather.	*d.* *d.*	*d.* *d.*	*d.* *d.*	*d.* *d.*
Butts, 50lb. to 56lb. each	22 to 23	22 to 24	22 to 24	22 to 24
Ditto, 60lb. to 65lb each	27 to 28	26 to 28	26 to 28	26 to 28
Merchants Backs —	21½ to 22	21 to 22	21 to 22	21 to 22
Dreſſing Hides —	18½ to 19	18½ to 19½	18½ to 19½	18½ to 19½
Fine Coach Hides —	19½ to 21	20½ to 21½	2 ½ to 21½	20½ to 21½
Crop Hides for cutting	21½ to 24	21 to 23½	21 to 23½	21 to 23½
Flat Ordinary —	18½ to 19½	18 to 19½	18 to 19½	18 to 19½
Calf Skins, 30 to 40lb. *p.* doz.	30 to 40	30 to 40	30 to 40	30 to 40
Ditto, 50lb. to 70lb. do.	36 to 42	36 to 42	36 to 42	36 to 42
Ditto, 70lb. to 80lb. do.	35 to 38	33 to 38	33 to 38	33 to 38
Sm. Seals (Greenland)	39 to 42	39 to 40	39 to 40	39 to 40
Large do. (per dozen)	51 to 81	51 to 91	51 to 81	51 to 81
Goat Skins *per* doz.		— to —	— to —	— to —
Tanned Horſe Hides prhide	20s to 36s	20s to 35s	20s to 35s	20s to 35s
Price of Tallow.	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
St. James's Market —	3 9	3 9	3 9	3 8
Clare Market —	3 9½	3 9	3 9½	3 8
Whitechapel Market —	3 8½	3 8	3 8	3 7
Per ſtone of 8lb. Average	3 9	3 8½	3 9	3 7½
Town Tallow —	64 6	64 0	63 6	62 6
Ruſſia (Candles) —	65 0	62 0	61 0	62 0
Ruſſia ditto (Soap) —	61 0	60 0	60 0	59 0
Melting Stuff — —	53 0	53 0	53 0	51 0
Ditto rough — —	36 0	36 0	36 0	36 0
Graves — — —	11 0	11 0	1 0	11 0
Yellow Soap — —	78 0	78 0	78 0	78 0
Mottled ditto — —	88 0	88 0	88 0	88 0
Curd ditto — —	92 0	92 0	92 0	92 0
Candles per dozen — —	11 0	11 0	11 0	11 0
Moulds — — —	12 0	12 0	12 0	12 0

Prices of Raw Hides, Hay and traw, &c. for Sept. 1806.

	First Week	2d Week	3d Week.	4th Week.
Raw Hides.	*s.d. s.d.*	*s.d. s.d.*	*s.d. s.d.*	*s.d. s.d.*
Beſt Heifers & Steers, pr ſt.	3 2 to 3 4	3 0 to 3 4	3 2 to 3 4	
Middling — —	2 10 to 3 0	2 8 to 2 10	2 8 to 2 10	
Ordinary — —	12 6 each	2 4 to 2 6	12 6 each	
Market Calf — —	15s to 17s	12 6 each	15s to 17s	
Eng. Horſe — —	2 6 to 3 6	15s to 17s	3 0 to 3 4	
Lamb Skins — —	2 4 to 2 6	2 8 to 3 9	2 4 to 2 6	
Sheep Skins — —	0 0 to 2 0	0 0 to 3 0	0 0 to 3 0	
Price of Hay and Straw.	*l. s. d.*	*l. s. d.*	*l. s. d.*	*l. s. d.*
St. James's—Hay —	4 — 6	4 — 0	4 3 0	4 1 0
Straw —	1 17 6	1 19 0	2 3 6	1 18 3
Whitech.—Hay —	4 4 0	4 4 0	4 4 0	4 5 0
New —	0 — 0	0 — 0	0 — 0	0 — 0
Clover —	5 0 0	5 3 0	4 17 6	4 17 0
Straw —	1 15 0	1 16 0	2 1 0	2 2 0
Newbury.				
Wheat — — —	60s to 90s	66s to 91s	66s to 90s	68s to 93s
Barley — — —	38s to 40s	38s to 42s	36s to 44s	40s to 46s
Oats — — —	28s to 35s	28s to 32	27s to 33	26s to 36
Beans — — —	—s to —s	—s to —s	—s to —s	—s to —s
New ditto — — —	—s to —s	—s to —s	—s to —s	—s to —s
Peas — — — —	—s to —s	—s to —s	—s to —s	—s to —s
Saliſbury.				
Wheat — — —	68s to 80s	70s to 82s	66s to 90s	74s to 82s
New ditto — — —	—s to —s	—s to —s	—s to —s	—s to —s
Barley — — —	34s to 40s	34s to 40s	38s to 42s	44s to 50s
Beans — — —	—s to —s	—s to —s	—s to —s	—s to —s
Oats — — —	30s to 34s	30s to 34s	29s to 33s	31s to 35s
Peas — — — —	—s to —s	—s to —s	—s to —s	—s to —s

TO CORRESPONDENTS.

IN answer to the enquiry of a Correspondent, Jethro Tull Esq. farmed his own estate at Shatborne, near Hungerford, Berks: His account of the experimental crop of a 100 acres of wheat is dated 1737.

We are particularly obliged to P. J. for his very accurate and valuable comparative experiment, and request such from other correspondents. We beg also our Yorkshire Correspondent will accept our commendation of his ideas on beasts of labour, and that he will be assured. we shall always be happy to hear from him, on that or any other subject, he shall chuse to discuss. We thank him farther for the correctness and elegibility of his manuscript.

The pressure of seed business past, we hope to hear as usual from our valuable and staunch friend Agricola Northumbriensis—Pastorius—Farmer Sandy—Mr. Brightley,&c. And we trust Mr. Bartley and other old Correspondents will not forget us.